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A Study of the Effects of Implementing Instructional Verbal Analysis on Self-Assessment by Student Teachers

Jeanette. Mines
Loyola University Chicago

A STUDY OF THE EFFECTS OF IMPLEMENTING INSTRUCTIONAL VERBAL ANALYSIS ON SELF-ASSESSMENT BY STUDENT TEACHERS

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JEANETTE M. MINES

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VITA

The author, Jeanette Marie Mines, is the daughter of Leo (Fritz) Mines and Anna (Leiferman) Mines. She was born on September 9, 1948, in Chamberlain, South Dakota.

Her elementary and secondary education was obtained in the public schools of Kimball, South Dakota. In 1970, Ms. Mines received a B. A. with a major in English and minors in education and speech from the College of Saint Teresa, Winona, Minnesota.

Ms. Mines began her educational career serving as Dean of Girls at Harmony Hill High School in Watertown, South Dakota, in 1970-1971. From 1971 through 1977 Ms. Mines taught at St. Bridget Elementary School in Chicago, Illinois. From 1977 through 1983, Ms. Mines taught in the English department of Proviso West High School, Hillside, Illinois.

In 1978, Ms. Mines received an M. Ed. with a concentration in reading from the University of Illinois at Chicago. From 1984 through 1987, Ms. Mines taught in the English department of the University of Illinois at Chicago with the rank of lecturer.

Ms. Mines entered Loyola University of Chicago in 1987 to pursue a doctoral program of study. While at Loyola

University, Ms. Mines served as a graduate assistant for the Teacher Education Office. She also taught a variety of undergraduate classes for the English Department and the School of Education.

In January, 1990, Ms. Mines became a full time faculty member of the Education Department of Lewis University. As an assistant professor, Ms. Mines teaches a variety of methods classes at both the elementary and secondary levels, supervises student teachers, and teaches classes in the graduate reading and administrative programs.

As the author of four young adult novels and numerous magazine and journal articles, Ms. Mines is a frequent workshop presenter and guest speaker for both students and teachers at the elementary, high school, and college level.

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CHAPTER I

INTRODUCTION

Background and Nature of the Study

Enormous, but hopefully not insurmountable challenges, face today's educators. No longer does educating America's children primarily focus on the attainment and execution of the traditional three R's of reading, writing, and arithmetic. Educating inhabitants of the 21st century who will be active, contributing members of society means schools must address a plethora of intellectual, social, and psychological needs. Federal and state guidelines attempt to address many societal concerns and local districts grapple with community needs and demands, but ultimately it is the classroom teachers who assume major responsibility and become the primary facilitators of guiding students in gaining the array of knowledge, skills, attitudes, and values they need not only to survive, but to contribute to society for the benefit of humanity.

The teachers who not only survive but thrive in the today's educational environments are those truly professional teachers who are thoughtful and reflective about their classroom environments, their students, and their interactions with the curriculum. Schools of

education and teacher training institutions work diligently to provide preservice teachers with both the theoretical background and practical experience they will need to provide quality education for their future students. School districts and communities strive to offer the types of support teachers must have to be effective. Formative and summative evaluation occur on a regular basis with the intent of providing objective feedback for the improvement of teachers for the benefit of their students. Test scores and achievement tests offer measures of student movement in the classroom that administrators, teachers, and the community often use to assess classroom progress. But ultimately it is the classroom teachers who are responsible for the primary assessment of their teaching, their classroom environment, and the needs and progress of their students. Preservice teachers, novice teachers, and experienced teachers all need to possess the skills and strategies that aid them in honest reflection and accurate self-assessment.

Schools of education and teacher training institutions strive diligently to provide a combination of theory classes, practical application classes, and clinical experiences to adequately prepare beginning teachers for their initial teaching experiences. Sometimes lost in this important preparation is the goal of making teachers lifelong students of teaching (Cruickshank, 1987). John

Dewey (1904) was among the first to stress that it is more important to make teachers "thoughtful and alert students of education than it is to help them get immediate proficiency" (p. 15).

Educational institutions must do more than prepare students to be good technically; they have an obligation to aid teachers to become thoughtful, reflective, and ultimately wiser teachers. Reflection implies thinking deliberately and systematically. Cruickshank (1987) asserts that "meditation, musing, contemplation, pondering, deliberation, cognition, reasoning, and speculation" are ways to think about teaching (p. 3).

Valverde's (1982) operational definition of reflection is:

> The (teacher) must examine his or her situation, behavior, practices, effectiveness, and accomplishments. Reflection means asking basic questions of oneself. The basic and comprehensive question during reflection is, What am I doing and why? Reflection is a form of slightly distorted self-evaluation - distorted in the sense that judgment is emphasized rather than data collection. The individual asks value-laden questions and responds on stored selected data (memory) and then concludes whether her or she is satisfied or dissatisfied. Reflection, then, is an individual's needs assessment and continued self-

> monitoring or satisfaction with effectiveness. As with any type of evaluation, reflection should be formative, that is, periodic, constructive and deliberate. (p. 86)

Teachers in training tend not to be effective reflective teachers unless guidelines for periodic, constructive, and deliberate self-evaluation are available. Novice and experienced teachers also often need assistance in becoming reflective, wiser teachers. In Porter and Brophy's (1988) synthesis of research on good teaching the importance of effective teachers being thoughtful about their practice is stressed. "They take time for reflection, monitor their instruction to make sure worthwhile content is being taught to all students, and accept responsibility for guiding student learning and behavior" (p. 82).

When reflection is translated into instructional changes in the classroom environment, teachers are in the process of self-assessment. Bailey (1981) defines teacher self-assessment as "the process of self-examination in which the teacher utilizes a series of sequential feedback strategies for the purpose of instructional self-improvement" (p. 9). Reflection and self-assessment are processes that occur over a long period of time. Self-assessment can be also be intimidating. Careful preparation and thoughtful planning are essential components for the success of any productive self-assessment (Bailey, 1981).

A successful self-assessment process is two fold. The

self-evaluator needs a systematic and comprehensive approach to use in self-assessment for instructional improvement and the self-evaluator must perceive a need to become self-directed in instructional improvement activities (Bailey, 1981). For teachers to be successful self evaluators they need to be proficient in self-help strategies. Bailey (1981) asserts the purposes of teacher self-assessment are to enable the teacher to:

- become aware of personal classroom teaching effectiveness
- learn how to control classroom instructional behaviors
- become self-directed in instructional improvement activities

Because research clearly indicates good teachers are reflective teachers who assume responsibility for student learning, methods and models must be available that enable teachers to be self-assessors about their profession.

Numerous techniques and strategies are available for aid in self-assessment for instructional improvement. Instructional aids such as journals, systems for analyzing classroom events, simulations, protocol materials, and reflective teaching can be used to encourage teachers to examine carefully educational experiences to foster thoughtful and wise teaching. Often these instructional improvement practices are dependent on input from a supervisor or administrator. This dependency may suffice in

the beginning stages of learning to be a self-assessor, but for self-assessment to become a fully functioning form of evaluation leading to instructional changes, the self-evaluator eventually needs to assume sole responsibility for reflection and assessment.

Journals are records of experiences in and out of the classroom that can offer both positive and negative feedback for reflection and action. Janesick (as cited in Cruickshank, 1987) proposed:

> The keeping of a classroom journal forces the teacher to assume a posture of reflection. The teacher sees in writing descriptions of and reactions to everyday life in classrooms...The teacher records feelings and thoughts as well. The journal becomes a self-monitoring outlet and may become a vehicle for redirection and change, if that is warranted. (p. 8)

Simulations for preservice teachers are used to give the feel and appearance of the educational setting. Role playing, films, plays, written interpretations, and a combination of these are used as the basis for group discussion and individual reflection (Cruickshank et al, 1981). Protocols according to Smith, Cohen, and Pearl (1969) are records of events or phenomenon of educational significance that are viewed by preservice teachers and thought about and illuminated using related theory from education or the social or behavioral sciences.

Reflective teaching (Cruickshank et al., 1981) is a process of teaching and learning preservice teachers engage in that leads to thinking deeply about these teaching and learning experiences. This thinking process produces insights and wisdom to guide their practice.

Systems for recording and analyzing selected classroom events were designed in the 1960's and 1970's and encouraged teachers to be more focused on certain aspects of their teaching. These systems allowed teachers to reflect on the data gathered and to make thoughtful decisions concerning this data. The Flanders' (FIAC) Interaction Categories (Flanders, 1970) provided a means for teachers or observers to record and analyze verbal interactions in the classroom. The analyzes provided opportunity for reflection centering on such questions as:

1. How much time was engaged in teacher talk?
2. How much time was engaged in student talk?
3. How much time was there silence or confusion?
4. When the teacher talked, how much time was devoted to accepting students' feelings, praising, or encouraging, accepting or using students' ideas, asking questions, lecturing, giving directions, or criticizing or justifying authority?
5. When the students talked, how much time was engaged in responding to teacher initiated talk or with student initiated talk?

The data obtained was the basis for reflection on these questions aiding teachers to consider what they did with what they intended to do. Rosenshine and Furst (1973), Medley (1979), Soar (1972), Brophy and Evertson (1976), and Freiberg (1987) also explored the use of observation instruments.

Because research indicates teachers need to be reflective and because accurate data and information is a necessary component of thoughtful reflection, schools of education and teacher training institutions have an obligation to offer preservice teachers a means of attaining data to begin the life long process of accurate self-assessment. Preservice teachers must become cognizant of the reasons for the process of self-assessment and to have the support to learn not to be intimidated by the process. Bailey (1981) suggests a simple three stage model that provides direction and focus for the novice self-assessor: 1) identify, 2) control, and 3) maintain or modify.

Because preservice teachers are traditionally overwhelmed with the complexity of the teaching process, a successful beginning of the self-assessment process focuses only on a narrow realm of teaching skills that can be objectively measured. There are regularly scheduled guided and unguided self-assessment practices with ongoing feedback provided. Written records for documenting the self-assessment process are maintained.

The Instructional Verbal Analysis (IVA) System is an instructional aid that provides data for accurate self-assessment. IVA, a computer program system created by Dr. Todd Hoover, associate professor, Loyola University of Chicago, analyzes verbal behaviors in the classroom. IVA, created from an analysis of the original research and work analyzing verbal behavior conducted by Ned Flanders, provides summary data that analyzes ten categories of verbal interactions in terms of ratios indicating a teacher's responsiveness to students, a teacher's dominance in the classroom, a teacher's propensity to ask questions in the classroom, and the level of student initiated talk in the classroom.

Implementing IVA in the development of the self-assessment process of preservice teachers meets the following criteria for the successful beginnings of learning how to conduct the life long process of self-assessment:

a. IVA provides objective summary data of a specified area of teaching skills: verbal interactions in the classroom.

b. IVA can be used as a form of self-assessment without the aid of a supervisor or administrator.

c. IVA can be part of a regular, ongoing self-assessment process in the classroom with minimal disruption.

d. IVA provides a written record of the self-

assessment process concerning the verbal interactions in the classroom.

IVA can easily be implemented using Bailey's three basic stages. In stage 1 - identify - the preservice teachers become aware of and examine and identify the verbal interactions that occur in the classroom. Audiotapes provide that information. In stage 2 - control - preservice teachers concentrate on analyzing the data IVA provides pertaining to the verbal behaviors and the resulting ratios. Analyzing the data enables the preservice teachers to arrive at conclusions concerning the behaviors that lead to the resulting ratios. Learning to control the instructional behaviors is often difficult and takes practice and patience. Guided and unguided practice is essential at this stage. Stage 3 - maintain or modify - involves the preservice teachers in the decisionmaking process. Preservice teachers decide what behaviors are desirable or undesirable for effective teaching. Maintaining effective teaching behaviors and eliminating ineffective teaching behaviors is the thrust of this stage.

Purpose of this Study

The purpose of this investigation is to examine self-assessment processing capabilities concerning verbal behaviors in the classrooms of student teachers when Instructional Verbal Analysis (IVA) is utilized. The major research questions to be addressed are as follows:

1. Do verbal behaviors change in the classrooms of student teachers when statistical data concerning verbal behaviors in the classroom is available for analysis and reflection?
2. Do changes in perceptions of self-assessment occur from the beginning of the fourteen week student teaching experience to the end when guided practice in reflective thinking and self-assessment is present?
3. Are students able to analyze verbal interactions in the classroom and provide accurate assessment of the types of behavior changes needed to reflect a more interactive classroom when IVA is employed as a basis for reflective thinking and self assessment?

Significance of this Study

Analysis of the data and the conclusions drawn from this study can be used by schools of education, teacher training institutions, and administrators and supervisors who are concerned with the need to help teachers become more reflective and to encourage them to engage in self-assessment on a regular basis. Accountability and reform are integral components of the self-assessment process. Sufficient funds, personnel, or time will never be available for a close, accurate scrutiny of every classroom in this country. Teachers must become accountable to themselves and

must implement the reforms their classrooms warrant. Reflection and self-assessment lead to classroom accountability and reform. Preservice teachers as well as many novice and experienced teachers need to become cognizant, capable, able, and willing self-assessors. To foster in teachers this need for the life long process of self-assessment, investigations of the instructional aids available must be done. These investigations of which this study is one must attempt to delineate the usefulness and proficiency of the instructional aids that contribute to the self-assessment process. This study investigates the use of IVA as an instructional aid in the self-assessment process of student teachers and attempts to offer conclusions concerning this system and its future implications.

Limitations of this Study

The following limitations are noted:

1. The computer program needed for IVA is unique and not readily available. Thus, replicating this investigation will be difficult unless IVA is obtained from Dr. Todd Hoover.
2. This investigation examines only the use of IVA as an instructional aid for self-assessment of verbal behaviors and does not examine other types of self-assessment strategies possible for altering verbal behaviors.

3. This investigation concentrates on verbal interactions in the classroom using IVA and does not account for any other classroom interactions.
4. This investigation does not analyze the types or levels of questions asked.
5. This investigation does not distinguish between silence and confusion in the classroom.
6. This investigation is not designed to evaluate long term use of IVA and the self-assessment process. A possible follow-up study might examine the effects of using IVA as part of the self-assessment process for novice and experienced teachers.

The Research Problem

This research study analyzes data collected from student teachers who utilized IVA (Instructional Verbal Analysis) as an instructional aid for self-assessment during their fourteen week full time student teaching experience. Three types of data were collected:

1. Statistical data from IVA of verbal interaction ratios and percents.
2. Statistical data from a Likert survey of self-assessment perceptions corresponding to IVA.
3. Descriptive data from a criterion measure indicating student teachers' ability to assess verbal behaviors and make suggestions for

instructional changes for a more interactive classroom.

T-tests and analysis of variance were used to analyze the data.

Definitions

1. IVA - Instructional Verbal Analysis
2. Teacher training institution - a college or university certified by the state in which the college resides that provides programs leading to a state teaching certificate.
3. Student teacher - student currently enrolled in a teacher training institution completing an apprenticeship in a school setting under the direction of a certified classroom teacher.
4. Cooperating teacher - certified teacher in a full time teaching position in a public or private school setting.
5. Supervising teacher - college or university teacher assigned to work with the student teacher and the cooperating teacher during the student teaching experience.
6. Self-assessment - "the process of self-examination in which the teacher utilizes a series of sequential feedback strategies for the purpose of instructional self-improvement" (Bailey, 1981).
7. IVA experts - persons knowledge of IVA who have trained

with IVA a minimum of thirty hours.

Organization of the Dissertation

Chapter I attempts to establish the theoretical background underlying this study. A framework briefly outlining the intent and direction of the study and considerations that need to be addressed is included. Chapter II contains a more complete review of the literature and of the research studies that form the foundation of this study. A description of the Loyola University Teacher Education Program and a detailed overview of IVA is also included in this chapter.

A discussion of the pilot studies preceding this study and a detailed description of the methodology of this study is contained in Chapter III. Chapter IV is comprised of the data analysis and discussion of the results of the study. Concerns and issues regarding validity, reliability, and measurement are discussed in Chapters III and IV. Chapter V includes a brief summary of the study along with a commentary on the implications of the results of this study. Suggestions for future investigations using IVA for self-assessment are included. The Table of Contents provides further listings of questionnaires, surveys, tables, and data used in this study.

Summary

This study was designed to measure the effects of using IVA, an instructional computer aid that analyzes verbal

behaviors, as one form of self-assessment in the classrooms of student teachers. Summary data of verbal interactions in the classroom derived from IVA provided one measure. An attitude survey measuring changes in perceptions of self-assessment relative to IVA provided a second measure. A criterion measure assessing the ability to analyze verbal interactions in the classroom provided a third measure. These measures assessed the effects of IVA as one form of self-assessment by student teachers in this study.

CHAPTER II

REVIEW OF THE LITERATURE

An Overview

The necessity of teachers engaging in reflective thinking and self-assessment is embedded in what research deems effective teaching. Self-assessment, one strand of effective teaching, meshes with other strands of effective teaching when teachers understand the purpose of self-assessment, appreciate its value, comprehend its implications, engage in the self-assessment process, and master its intent. Because there are multiple aspects to the self-assessment process and many instructional aids to assist in the self-assessment process, research can guide teachers and teacher educators in appropriate directions for maximum and effective utilization of the self-assessment process.

The purpose of this chapter is to review the literature and research that has contributed to the framework for this study. A review of the literature and current research findings concerning effective teaching strategies begins the chapter. Next an analysis of the literature related to reflective thinking and self-assessment is included. Research findings of teacher perceptions of themselves are

also presented. Because this study concentrates on utilizing the self-assessment process with preservice teachers, the literature review and research also includes the current status of teacher education programs. A delineation of the teacher education program of Loyola University is included because of its relevance to this study. The use of systematic feedback from classroom observation systems, the Flanders model, and verbal interactions in the classroom are also covered. An explanation of the Instructional Verbal Analysis (IVA) system is included because it is the instructional computer aid used by student teachers to analyze verbal behaviors in the classroom for this study.

Research of Effective Teaching Strategies

Barak Victor Rosenshine (1985) states that in general research indicates when effective teachers teach, they:

- begin a lesson with a short statement of goals
- begin a lesson with a short review of previous, prerequisite learning
- present new material in small steps, with student practice after each step
- give clear and detailed instructions and explanations
- provide a high level of active practice for all students
- ask a large number of questions, check for student understanding, and obtain responses from all students
- guide students during initial practice

- provide systematic feedback and corrections
- provide explicit instruction and practice for seat work exercises, and where necessary, monitor students during seatwork
- continue practice until students are independent and confident

Walberg, Schiller, and Haertzel (1979) in a summary of research analyzed seventy different variables associated with teaching. Listed below are the teaching variables for which 90 percent or more of the studies indicated an impact on learning:

- time on learning
- curriculum innovation on learning
- the effect of personalized systems of instruction (PSI) on learning
- mastery learning
- revision of instruction based on achievement
- direct instruction on achievement
- lecture versus discussion on achievement
- student-centered versus instructor centered discussion on attitude
- student-led versus instructor-led discussion on achievement and attitude
- factual questions versus conceptual questions on achievement

- effects of specific teaching traits on achievement; clarity, flexibility, enthusiasm, structuring
- psychological incentives; teacher's cues to students, teacher's engagement of class in lesson, each student engaged in lesson
- open education versus traditional education on: creativity, attitude toward school, curiosity, independence, and cooperation
- motivation and learning (p. 94)

Manatt (as cited in Beach & Reinhartz, 1982) listed fourteen ascriptive teacher variables that correlate with effective teaching:

- teacher has superior knowledge of subject matter
- teacher has high expectations of students
- teacher uses praise more than criticism
- teacher spends less time in classroom management
- teacher teaches to the class as a whole or to large groups
- teacher uses less seat work, but monitors closely what is given
- teacher selects activities and directs them, not the students
- teacher models what is to be taught
- teacher uses easy questions with a high success rate

- teacher teaches until mastery of unit is achieved
- teacher uses detailed lesson plans with a variety of activities
- teacher spends part of each period preparing learners for learning
- teacher provides ample opportunity to learn criterion material
- teacher uses responses that encourage students to elaborate upon answers (listed in Beach and Reinhartz, 1982)

The call during the 1980's for effective schools produced a considerable body of research that strived to identify the characteristics of effective schools. Brookover and Lezotte (1977), Edmonds (1979), Purkey and Smith (1983), and Rutter (1979) all made significant contributions to the literature on effective schools.

In their synthesis of research on good teaching, Porter and Brophy (1988) sketched a portrait of effective teachers as semi-autonomous professionals who:

- are clear about their instructional goals
- are knowledgeable about their content and strategies for teaching it
- communicate to their students what is expected of them and why
- make expert use of existing instructional materials in order to devote more time to

practices that enrich and clarify the content

- are knowledgeable about their students, adapting instruction to their needs and anticipating misconceptions in their existing knowledge
- teach students metacognitive strategies and give them opportunities to master them
- address higher, as well as lower-level cognitive objectives
- monitor students' understanding by offering regular appropriate feedback
- integrate their instruction with that in other subject areas
- accept responsibility for student outcomes
- are thoughtful and reflective about their practice

These findings clearly indicate that in the last decade researchers have explored the relationship of effective schooling with good teaching. The research has produced clear mandates on what constitutes effective teaching. Teachers need to be knowledgeable, active, reflective practitioners who create an interactive learning environment for the benefit of each individual learner. Active learning is an important element for student learning and retention of that learning. But effective teaching requires more than classroom teachers meeting a list of criteria set forth by theoreticians and administrators. Effective teaching requires professionals who think, reflect, and exercise good

judgments in constructing the education of their students (Porter & Brophy, 1988). As important as it is to master effective teaching strategies, it is more essential that teachers hone their abilities in thoughtful reflection, honest analyzation, and in making sincere change efforts for instructional improvement and enhanced learning in their classrooms.

Reflective Thinking and Self-Assessment

Reflective thinking leading to self-assessment is the hallmark of professional teachers. Professionals who engage in reflection are thinking deliberately and systematically about their teaching. They meditate, muse, contemplate, ponder, deliberate, reason, and speculate about their teaching (Cruickshank, 1987).

Teacher thinking, planning, and decision making are viewed as constituting "a large part of the psychological context of teaching" (Clark & Peterson, 1986, p. 225). Intellectually alive and reflective teachers challenge students to think critically and act creatively.

Teaching is a complex activity that requires thoughtful planning as well as the ability to make instant decisions. Hunter (1979) describes teaching as a constant stream of conscious and unconscious decisions. Berliner (cited in Lanier and Little, 1986) talks about the cluster of decisions that are made before, during, and after instruction. Teaching is a deliberate process requiring

teachers to see and think about what they do (Zumwalt, 1982).

Cruickshank (1987) poses the question, "What is more important to the beginning teacher than being readied for the first year of teaching?" His answer, "Being readied for all the years that follow," reminds educators that the first year of teaching occurs only once and it is for the years that follow the first-year teaching experience that teacher education institutions must prepare teachers. Teachers need to be prepared not only to cope with their initial experiences, but must learn to develop the higher-level thinking skills with regard to their teaching that will make them thoughtful, reflective practitioners. To reflect is to think, but reflection requires more than simply recalling something. Dewey (1933) defined reflective thinking as "active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further conclusions to which it tends" (p. 9). Dewey used reflective thinking to mean bringing to mind and considering beliefs and knowledge about teaching (Cruickshank, 1987).

Dewey (1916) suggested good habits of thought are best engendered when situations are provided that initiate and provoke reflection. Real or simulated situations provide the basis for thoughtful consideration and reflection of the teaching process and the teacher role in that process.

Reflection "enables us to know what we are about when we act" (Dewey, 1933, p. 17).

Zeichner (1982) defines qualities necessary for 'reflective teaching' as:

- open mindedness: students should be encouraged to consider more than one side of an argument and to recognize the problematic nature of knowledge.
- responsibility: students would be involved in the assessment of long-term consequences of actions and to look beyond the immediate instrumental consideration of 'what works' to the consideration of the underlying values and principles and to a more detailed analysis of worthwhileness.
- wholeheartedness: students should regard openmindedness and responsibility as being central to the work of a reflective teacher.

Holton (as cited in Cruickshank, 1987) said:

Faced with the particulars of a teaching experience, the student of teaching is asked to draw conclusions...what happened in general? Did learning take place? What happened to promote learning? What happened that got in the way of learning? What did the pupils actually learn? What might have been learned? What other ways might the material have been taught? What is the role of the teacher? (p.8)

These types of reflection lead to self-assessment as

Bailey (1981) defines it: "process of self-examination in which the teacher utilizes a series of sequential feedback strategies for the purpose of instructional self-improvement" (p. 9). A basic assumption of self-assessment is that teachers can function autonomously in self-improvement activities. The purposes of teacher self-assessment are to enable the teacher to 1) become aware of personal classroom teaching effectiveness, 2) learn how to control classroom instructional behaviors, and 3) become self-directed in instructional improvement activities (Bailey, 1981).

Bailey (1981) contends understanding self-assessment can be accomplished by viewing self-assessment as a process. Self improvement occurs when teachers acquire skills that lead to intelligent decisionmaking about personal classroom teaching. Bailey's seven sequential steps of self-assessment that build upon one another include:

1. Philosophical overview of teacher self-assessment
2. Media utilization
3. Set and closure identification
4. Verbal cue identification
5. Nonverbal cue identification
6. Planning and using means-referenced objectives
7. Observation instrument utilization (p. 10)

Bailey stated in his 1981 work Teacher Self-Assessment: A Means for Improving Classroom Instruction that research

studies relating to self-assessment as he defined it were virtually non-existent. There were a number of studies related to isolated self-help strategies such as videotape feedback, self-perception, and observations forms. Researchers tended to view a single strategy as the total process involved in teacher self-assessment rather than viewing the strategy in the context of a comprehensive understanding of teacher self-assessment.

Researchers (Bailey, 1978; Centra, 1979; Levin, 1979) also defined self-assessment in a variety of ways. These varied definitions have led to problems in the research. Studies by McNeil and Popham (1973) and Peck and Tucker (1973) indicated teachers are mostly incapable of personal objectivity and lack the motivation for self-assessment. Bailey (1981) drew a more positive conclusion from a five-year followup study of approximately 200 teachers who had been trained in Bailey's seven steps of teacher self-assessment. The teachers remained competent in self-assessment skills, continued to value specific strategies of self-assessment, but did engage in fewer actual self-help sessions than they did during the period of formal training.

Clark and Peterson (1986) suggest that there is little systematic and cumulative research on the teacher as a reflective professional; "researchers have also tended to focus on relatively discrete and isolated aspects of teachers' thoughts and actions" (p. 29).

Self-assessment techniques commonly employed are:

1. Individual assessments
    a. Personal reflection
    b. Analysis of classroom tapes
    c. Self-assessment checklists
2. Feedback assessments
    a. Student
    b. Peer teacher and supervisory staff
3. Interactive Assessments
    a. Clinical supervision
    b. Microteaching (Iwanicki & McEachern, 1983, p. 67)

Personal reflections are the most widely used approach to self-assessment, but are valid only to the extent that teachers have an adequate grasp of the concepts affecting the teaching-learning process (Iwanicki & McEachern, 1983). Teachers also need to have an adequate grasp of their own classroom behaviors.

Novice teachers generally agree about where the problems are (Veenman, 1984), but teachers tend not to be objective about those problems in relation to their own experience. Teachers are not good judges of their own teaching behaviors (Good & Brophy, 1974; McNeil & Popham, 1973; Rowe, 1969). Teachers frequently are unaware or misinterpret their own behavior in the classroom (Borg, Kelly, Langer & Gall, 1970; Brophy & Good; 1970). Teachers

tend to rely upon rather unsystematic observations of student performance and consistently overestimate their students' achievements (Fuchs & Fuchs, 1984). Teachers seem to be less rational and less accurately informed about the processes and effectiveness of their instruction than might be expected or even hoped for (Jones & Krouse, 1988). Self-report data from teachers has generally been termed unreliable or provided "inaccurate" results (Hook & Roshenshine, 1979).

Two studies that dealt directly with the accuracy of teachers' self-reporting using focused self-report instruments are Newfield (1980) and Koziol and Moss (as cited in Koziol & Burns, 1986). Newfield's study of teacher-observer agreement on the presence or absence of specific instructional practices during a single 30-minute class period yielded evidence of a very high teacher-observer agreement. Koziol and Moss reported modest positive findings for teachers' self-reports with their students' reports for composition instruction over a year-long period. Koziol, Bohn, and Moss (as cited in Koziol & Burns, 1986) claim use of self-reports enhances a teachers' self-reflection about their classroom practices. Teacher accuracy is apparently improved when teachers complete self-report instruments on more than one occasion. Self-report experience can enhance a teacher's ability and willingness to be self-reflective about one's teaching practices (Koziol & Burns, 1986).

In a study by Johnson (as cited in Hook & Rosenshine, 1979) student teachers taught two twenty-minute lessons and following each lesson they were asked to estimate the amount of direct and indirect teaching in the lessons. The results indicated the student teachers' estimates of direct and indirect teaching were very inaccurate. In a study by Steele, House, and Kerins (1971) the authors correlated teacher estimates of percent of class time spent in teacher talk, student estimates of the percent of time spent in teacher talk, and actual percent of class time spent in teacher talk as obtained by the Flanders Interaction Analysis data. The student estimates correlated .67 with actual teacher talk and teacher estimates correlated .35. The authors concluded that the "teacher would be a poor source from which to obtain information about the actual emphasis occurring in the classroom" (p. 452). From the analysis of the research on accuracy of teacher reports on classroom behavior, Hook and Roshenshine found teacher reports of specific behaviors are not particularly accurate. Teachers do not seem to have practice in estimating their behavior and then checking it against actual performance. Teachers, and preservice teachers in particular, need practice and guidelines in assessing themselves and their classroom behaviors.

Because research verifies the vital role of teachers, teacher education programs more than ever must address the

need for educating a profession of well-educated teachers prepared to assume the necessary power and responsibilities to productive, worthwhile schools of the future (Carnegie Forum on Education and the Economy, 1986).

Teacher Training Institutions

In three-quarters of the four-year colleges and universities that prepare teachers there is the appearance of standardization (Plisko, 1983). Course work for prospective teachers is organized into three catagories: general education, subject matter concentrations, and pedagogical study. These catagories include general liberal arts courses taken by all undergraduates, courses reflecting the coreknowledge in selected areas, and courses designed to provide knowledge about the purpose and origins of schooling in America as well as fundamental pedagogical principles and practices. Teacher training programs are expected to prepare students for the classroom. Beginning teachers are expected to be able to provide for the physical, emotional, and intellectual well-being of the children in their classroom. They must be able to provide equitable and appropriate learning experiences for their students and help them acquire the content and skills appropriate to their grade and level. Beyond the general expectations and three categories in initial preparation there is limited common substance in teacher education curriculum. Course content varies not only from teacher training institution to teacher

training institution, but there is great discrepancy within institutions (Lanier & Little, 1986). Variations in certification requirements from state to state are prevalent also.

Students in the same institutions often have very differing experiences in their teacher training. Lortie (1975) observed the absence of the "shared ordeal" in teachers' education that represents an important socializing factor for professionals. Prospective teachers generally go through formal preparation programs individually rather than as members of a cohort group. Students do share the student teaching ordeal and the overwhelming first year experience, but they do so independently and there is not a sense of solidarity with other neophyte teachers.

Preservice teachers are generally not guided or expected to be self-analytical about the ways their own personalities can and will affect the classroom. Lortie (1975) points out the lack of attention given to this area of concern:

> Social workers, clinical psychologists, and psychotherapists are routinely educated to consider their own personalities and to take them into account in their work with people. Their stance is supposed to be analytic and open; one concedes and works with one's own limitations - it is hoped - in a context of self-acceptance. The tone of teacher interviews and their

> rhetoric reveals no such orientation; I would characterize it as moralistic rather then analytic and self-accusing rather than self-accepting. It does not appear that their work culture has come to grips with the inevitabilities of interpersonal clash and consideration of how one copes with them. (p. 159)

Even though social workers, clinical psychologists, and psychotherapists are graduate students and most preservice teachers are undergraduate students, teacher training institutions need to provide teachers with training and support for examining their own personalities and how they affect the students and their classrooms.

Feeling overwhelmed is common for the prospective teacher placed in the field. The press of classroom events makes it difficult for even the experienced teacher to attend to individual children (Doyle, 1977; Jackson, 1968). The complexities associated with teaching, where one must deliver professional expertise in a group of twenty to thirty children is just coming to be understood (Lanier & Little, 1986). Research suggests that classroom experience tends to place management at the center of teaching, possibly at the expense of student learning (Hoy, 1967; Hoy & Rees, 1977). Most preservice teachers enter the field primarily concerned with survival. After survival concerns are met, teachers focus on curriculum and impact on students (Fuller, 1970).

The debate between a practical apprenticeship and a more intellectual pedagogy for preservice teachers tends to be resolved in favor of the technical, management approach. What is not learned is a set of intellectual tools that would enable preservice teachers to evaluate the quality of education they are receiving as well as providing. Teachers often teach the way they were taught unless they are introduced to ways of thinking, analyzing, and assessing that will enable them to move beyond their original comfort zone.

Initiation into the work of teaching has been labeled abrupt or unstaged with first-year teachers assuming full responsibilities of the classroom from the very first day. Portraits of the first year are remarkably consistent. Retrospective accounts of experienced teachers (Little, 1981; Lorie, 1975), interviews and journals or beginning teachers (Fuchs, 1969; Ryan, 1970; Zeichner, 1983) and descriptions of teacher induction programs (McDonald, 1980; Tisher, 1980; Zeichner, 1980) indicate teachers learn by trial and error and work alone in this arduous journey. There is little teacher collaboration and minimal in-service training.

A major focus of The Study of the Education of Educators (SEE) (Edmundson, 1990), conducted under the direction of John Goodlad, Kenneth Sirotnik, and Roger Soder, was to investigate the curriculum of teacher

education and the experiences that institutions deliberately provided for prospective teachers. SEE's findings support earlier studies that indicated teacher education in America is quite uniform with programs focusing on three major components: general studies, specialty studies and professional studies. Requirements vary from school to school, but there tends to be consistency from program to program. SEE findings indicate teacher education programs are characterized by the lack of a sound theoretical rationale. Most programs lacked a coherent, articulated, and commonly shared vision of what it means to be a teacher. SEE proposes that if teacher education is to contribute to the renewal of schooling in America, curriculum must be designed to prepare teachers who are educated people, who understand and accept their responsibilities for stewardship of schools as institutions in a democratic society, who approach their work thoughtfully and reflectively, and who have the skills and attitudes necessary to contribute to on-going school renewal efforts (Edmundson, 1990).

SEE advocates the general studies component of the teacher education curriculum should prepare teachers to be educated persons who are able and willing to participate in "the human conversation." Teacher education programs need to focus attention on critical issues in education and help prospective teachers understand and develop a commitment to the idea that schools in a democracy are responsible for

promoting democratic values and preparing students for effective citizenship.

The goal of teacher education according to SEE is not to "indoctrinate" or "train" future teachers to perform in prescribed ways, but to educate students so they can perform skillfully and reason soundly about their teaching (Edmundson, 1990). The whole curriculum, but especially the professional coursework, must focus deliberate and sustained attention on the development of the skills and attitudes needed for decision making and reflection so teachers can develop the abilities and dispositions to make thoughtful decisions and to reflect on their experiences. Only four of the 29 programs investigated by SEE had any coordinated efforts in the areas of thoughtful decision making and reflective inquiry.

A SEE survey indicated that students see student teaching as having the greatest potential on contributing to their success as teachers, as the most interesting part of their preparation, as the part that pays the most attention to their individual needs, and was rated highest in influencing their educational values and beliefs. SEE contends that if teachers are to be thoughtful and reflective, the student teaching experience must be carefully designed and planned to allow students to see teachers functioning as decision makers and to offer students many opportunities to develop and refine their own

skills in problem solving and reflective inquiry (Edmundson, 1990).

SEE interviewed and/or observed 45 cooperating teachers and judged 17 to be questionable models either because their own teaching was uninspired or because they showed little concern or interest in providing assistance to the student teachers. More than half of the cooperating teachers did not provide regular, useful feedback to the student teachers and many reported they wait for the student teachers to ask them for feedback. Some cooperating teachers were concerned student teachers might be overwhelmed by too much feedback and others lacked confidence in their own abilities to help student teachers (Edmundson, 1990).

Student teachers as well as novice teachers need to be recipients of both formative and summative evaluation in a non-threatening environment that will enable them to grow and mature as teachers. The evaluation must include frequent feedback that will help them improve their performance. Evaluation needs to be specific and should include explanations as well as possible solutions. Initially teacher performance may be compared to an accepted standard, but eventually teachers need to assess their own progress compared to the established standard since professional development requires self-analytical and self-critical ability (Dinman & Stritter, 1986).

Teaching evaluation according to Rippey (1981) should

be based on the following premises: a) teaching does make a difference in what and how much students learn; b) teaching behaviors are changeable and can therefore be improved; and c) evaluation of teaching is possible. It is essential preservice teachers understand and value what makes an effective teacher, and they must be ready to be evaluated on those qualities. Woolever (1985) contends that a diagnostic rather than summative evaluative emphasis should characterize student teaching. Assessment needs to be analytic not impressionistic, formative and diagnostic not summative and judgmental (Ashcraft & Tann, 1988).

Obstacles to preparing preservice teachers to be thoughtful, reflective practitioners or students of teaching include:

- the need for education units and students to accept preparing lifelong students of teaching as a goal.
- the need for education units to recognize that there are means to achieve that goal and that reflection on teaching is one of them.
- the need for teacher educators to become knowledgeable about and skilled in modes of instruction that promote the study of teaching.
- the need for preservice teachers to accept modes of instruction that promote the study of teaching.
- the need for both education units and preservice

> teachers to recognize that becoming a student of teaching involves a commitment over time. (Cruickshank, 1987, p. 4).

Self-assessment is recommended when used in conjunction with another method and when based on specific criteria agreed upon in advance. Although the empirical evidence for the effectiveness of self-assessment in promoting teaching improvement is not great, Rippey (as cited in Dinham & Stritter, 1986, p. 962) concluded, "Self-assessment is essential because one cannot improve one's teaching until personal deficiencies are recognized and the need for change internalized."

Self-assessment as one way of promoting professional growth is supported by theoretical and empirical investigations. Hall's (1979) work delineating the dynamics and stages of change, and Fuller's (1969) research focusing on affective dimensions of teacher growth both suggest the importance of an individual being involved in the development process. Allowing and encouraging teachers to assess their own instruction and to decide themselves which areas they would like to improve clearly puts teachers in control.

Self-assessment has been recommended as a means of improving one's own classroom instruction (Bailey, 1981; Rohrkemper, 1982; Tierney, Readence, & Dishner, 1980), but there is little evidence available on its effectiveness

(Dinham & Stritter, 1986).

If teachers as well as student teachers are to become more reflective and become skilled in the self-assessment process, they must be asked to reflect and they need to begin with the skills they already possess. Journals are sometimes used as a self-assessment tool. At the University of Wisconsin journals are used in the elementary preservice program (Zeichner & Liston, 1987):

> The journals are intended to provide the supervisors with information about the ways in which their students think about their teaching and about their development as teachers, with information about classroom, school, and community contexts: as well as to provide student teachers with a vehicle for systematic reflection on their development as teachers and on their actions in classroom and work contexts. (p. 33)

Many teacher education programs utilize journals within their programs, but few have analyzed their effectiveness as a tool in the development of reflective practice in teaching according to Fredericks (as cited in Bolin, 1988). Bolin's (1988) case study of one preservice teacher utilizing the use of journal suggests that the reflective journal may be an effective tool in helping students become deliberative about their teaching. There needs to be more research in the effective use of journals as a self-assessment tool.

SEE contends most of the teacher education programs

they visited emphasized the development of students' technical skills. The students generally were not encouraged or helped to form habits or patterns of thought that would aid them in dealing with problematic situations in reflective and effective ways. In general student preservice teachers do not see teaching as "deliberate action", the ability to use knowledge to guide their work. Few opportunities were provided for sustained inquiry and little time was alloted for reflection. Reflective practice and self-assessment were not common practices in the field. The SEE study recommends that the skills and habits of reflection and inquiry need to be deliberately taught, consistently nurtured, and rigorously applied (Edmundson, 1990).

The teacher education program of Loyola University of Chicago meets the criteria demanded by the state of Illinois for training teachers to be certified in Illinois. As similar as Loyola University is to many teacher training institutions, Loyola University also differs in unique ways. Since 1989 Loyola University's School of Education undergraduate program has been engaged in work with the student teachers in a rigorous attempt that parallels the SEE study recommendations of teaching, nurturing, and applying the skills and habits of reflection and inquiry. A delineation of the teacher education program at Loyola University illustrates its commitment to encourage

thoughtful reflection leading to a life-long process of self-assessment for teachers.

Teacher Education Program of Loyola University

The undergraduate program of The School of Education of Loyola University of Chicago offers programs leading to Illinois state teacher certification at the elementary and secondary levels and in special education. The School of Education offers curricula leading to the degree of Bachelor of Science in Education with a major at the elementary level (K-9), and a Bachelor of Science in Education with a major in special education at all levels (K-12). A sequence of professional education and general education courses leading to secondary certification is also offered for students completing a degree program for the Bachelor of Arts or Bachelor of Science programs in the College of Arts and Sciences of Loyola University. Secondary certification is offered in the following areas: English, history, mathematical sciences, French, German, Spanish, Latin, biology, chemistry, physics, communication, political science, psychology, sociology, and theatre.

Students who have earned a degree from another college or university are also eligible for Illinois state teacher certification through Loyola University at the elementary level, secondary level, and in special education. Eligibility for certification is met after students complete all the major requirements of a Loyola University graduate

as well as the professional and general education requirements of the School of Education in the area of certification.

For the purposes of this study students preparing for certification at the elementary and secondary levels participated; therefore Loyola University's special education program is not discussed. The following description of Loyola University's undergraduate programs in elementary and secondary education in the School of Education reflects the requirements in effect during the undertaking of this study.

The undergraduate programs in the School of Education consist of classes and experiences that provide the professional training needed for a career in education as well as a liberal education. Specialized education courses provide students with the knowledge of content areas as well as a myriad of professional experiences for mastering the skills, techniques, and knowledge essential for effective teaching. The curricula also include required courses in history, literature, psychology, philosophy, and theology, which integrate educational theory and practice for development of a broad personal culture and sound philosophical background for understanding the modern world and the modern child according to the Loyola University undergraduate handbook (1989-1991).

Students wishing to be certified through Loyola

University first must be admitted to the School of Education. The School of Education Assessment Committee (SEAC) determines procedures, guidelines, and expectations for prospective education students. Entrance to the School of Education for freshman is based on a CAR of 40. The CAR is a statistic which is a predictor of college success. External and internal students with twenty hours or more credit who wish to transfer into the School of Education must have a GPA of 2.0 (out of a possible 4.0) in previously completed college or university courses. Unclassified students who seek certification through Loyola University must be admitted to Loyola University, have a certifiable major in one of the previous listed areas, have an overall GPA of 2.0 or better, and a 2.5 GPA in the certifiable major.

Once students have been accepted into the School of Education, admission to a specific program in elementary or secondary education is considered after the successful completion of two of the three education courses from the Education Program of Study as specified by the program for which the student applied. The following criteria must be met for admission to the elementary or secondary education program:

1) A 2.5 GPA in major and overall coursework.
2) The completion of the required six hours of English 101 and 201 with grades of 'C' or better.

3) The completion of six hours of required math courses with grades of 'C' or better.

4) A grade of 'C' or better in a speech communication course.

5) Application to program including three recommendations from faculty members in Education and Liberal Arts.

6) An interview with a committee of faculty members.

7) Admission by committee to a major program.

SEAC examines transcripts, recommendations from faculty, and the results of standardized tests administered by the School of Education. After all criteria has been met, SEAC acts upon application for admission into the elementary or secondary program.

In addition to the required 86 semester hours in the liberal arts core required by Loyola University, elementary majors complete the following education courses:

American Education	3
Educational Psychology	3
Philosophy of Education	3
Child Development	3
The Exceptional Child	3
Elementary Methods Block I:	12
Science and Social Studies	
Mathematics	
Reading and Language Arts	

Educational and Psychological Measurement	
Elementary Methods Block II:	6
Children's Literature	
Workshop in Reading	
Student Teaching	6
	39

Students seeking certification at the secondary level complete the requirements for a major in one of the approved areas listed previously as well as complete the following education requirements:

American Education	3
Educational Psychology	3
Philosophy of Education	3
The Exceptional Child	3
Techniques of Teaching in Secondary Schools	3
Field Study in Education	3
Special Methods Class in Major	3
Student Teaching	6
	27

Embedded in selected education courses in both the elementary and secondary sequences are one hundred hours of supervised field experience students must complete before they are eligible to student teach.

Student teaching is the culminating experience in the teacher education program. Performance in pre-student teaching experiences is reviewed by SEAC. Oral English is

closely monitored. GPA must remain at or exceed 2.5. Two writing intensive core courses must be completed before students are eligible to student teach. Students apply for student teaching during the semester prior to the time they wish to student teach. Students must file an application, complete the interview process, receive satisfactory ratings from three faculty members and a recommendation by the chairperson of their major department, and present a certificate of physical fitness.

Loyola University students accepted for student teaching prior to the 1990-91 academic school year who participated in this study were required to be in a school setting for fourteen weeks. Student teaching hours were as follows:

Elementary	8:30 a.m. to 12:00 Noon daily and one afternoon a week
Secondary	8:00 a.m. to 1:00 p.m. daily (minimum of three classes)

Student teachers could not take more than twelve semester hours during the semester they were student teaching. They were also required to attend student teaching seminar every Wednesday from 2:00 p.m. to 4:00 p.m. for fourteen weeks during their student teaching experience.

Each student teacher was assigned a Loyola University supervisor. The role of the university supervisors is to serve as a liaison between Loyola University and the

cooperating teachers and cooperating schools. The university supervisors make formal classroom visits to the student teachers' classrooms a minimum of six times throughout the semester. During these visits the supervisors observe the student teachers in a variety of teaching contexts and provide feedback to the student teachers.

The cooperating teachers are expected to provide feedback concerning the student teachers' professional progress on a regular basis. Experience has indicated feedback from cooperating teachers is not necessarily consistent from student to student for numerous reasons including the comfort level, skill, and knowledge of the cooperating teachers in giving positive and negative feedback to the students (Edmundson, 1990).

In addition to the feedback from the university supervisors and cooperating teachers, student teachers are to assess their own strengths and weaknesses. The ability to do accurate self-assessment on a frequent and regular basis is one hallmark of an effective teacher (Porter and Brophy, 1988).

Accurate self-assessment is difficult for student teachers, yet it is vital for them to be able to objectively assess their own classroom interactions so adjustments and alterations for themselves and their students can be made. Loyola University student teachers are required to keep a

student teaching journal as one means of assessing their student teaching experience. On a regular basis students provide written reflection in the journals which are read periodically throughout the semester by the university supervisors and Director of Teacher Education.

These journals serve as outlets for thoughts, feelings, ideas, and reactions that generally focus on specific areas of interest and/or concern to the student teachers. These journals provide one effective path to self-assessment, but a variety of self-assessment strategies brings both balance and objectivity to the self-assessment process. At Loyola University the Instructional Verbal Analysis System (IVA) is another tool student teachers use to obtain accurate feedback concerning the verbal interactions in their classrooms. IVA is a classroom observation system that provides objective data for use in the self-assessment process.

Classroom Observation Systems

Student teachers do not automatically develop the disposition and skills necessary to engage in the process of effective self-assessment. It cannot be taken for granted that student teachers wish to engage in the self-evaluation necessary for reflective teaching (Biott, 1983). Student teachers need to be informed of various means available for pursuing the self-assessment process and they need on-going practice in the process of self-assessment.

Research on the application of effective instructional behaviors has been systematically examined in both special and regular education (Carnine, 1981; Englert, 1984; Gersten, 1985; Stevens & Rosenshine, 1981) with consistently higher achievement rates observed in classrooms where teachers used specific, observable instructional behaviors. Student teachers need to be informed not only about effective teaching techniques, they must have the opportunity to develop effective teaching strategies in classroom settings. Semmel (1978) contends attainment of effective teaching strategies depends upon the specification of target behaviors; reliable, valid performance feedback during or immediately after acquisition trials; and access to data from previous training trials. This can be accomplished by using an objective, computer-based feedback system (Hindman & Polsgrove, 1988). Meaningful insights leading to effective instructional changes can occur by using systematic observation systems. Instructional aids that offer unbiased data for the purpose of self-assessment are essential for accurate self-assessment to occur for experienced teachers as well as novice teachers and particularly for preservice teachers.

The two basic types of observation instruments available to teachers engaging in self-assessment are expert-prepared instruments and teacher-made instruments. Flanders' Interaction Analysis Categories (FIAC) is an

example of an expert-prepared instrument. Flanders system comprises ten basic categories:

1. accepting feelings
2. praising or encouraging
3. accepting ideas
4. asking questions
5. lecturing
6. giving directions
7. criticizing or justifying authority
8. student responding to teacher
9. student-initiated talk
10. silence or confusion

The Flanders instrument deals with verbal behaviors in the classroom. Every three seconds or whenever a different behavior occurs a number corresponding to the behavior is recorded either by an observer or by the teacher listening to an audiotape of the lesson. The analysis of the behavior in the form of a matrix or graph provides a wealth of information about personal instructional behavior. The data gathered with the Flanders system classifies teacher behavior as indirect, behavior that maximizes freedom of the student to respond, and direct, behavior that minimizes freedom of the student to respond. The amount of freedom a teacher gives to a student is central to Flanders. Flanders' observation system is an effective means for providing objective information and was widely used in

classrooms across the country in the 1960' and 1970's.

Other systematic observation systems (Coker & Coker, 1982; Stalling, 1986) have also been used to provide classroom data to teachers. Several states including Florida, Texas, and Tennessee have designed and implemented observation systems and have mandated how they are used in the schools. Freiberg (1987) developed Low Inference Self-Assessment Measure (LISAM), a self-assessment process for teachers. LISAM, an instrument built on the early work of Flanders' (1965) 10-item observation instrument, provides teachers with a clear indication of their behaviors in key instructional areas. Teachers audiotape their own teaching sessions and then analyze their teaching in the instructional areas of questioning skills, teacher talk/student talk, identification of motivating set and closure, wait time, identification of number of positive statements made by the teacher, and identification of the number of times the teacher uses student ideas. Freiberg contends using LISAM as a self-assessment procedure will make the principal's supervisory role in facilitating effective instruction a much more rewarding and fulfilling experience.

Instructional Verbal Analysis (IVA), a computer program system created by Dr. Todd Hoover, associate professor of Loyola University of Chicago, analyzes verbal behaviors in the classroom. IVA, based on the original research analyzing

teacher verbal behavior conducted by Ned Flanders (Flanders, 1970), provides summary data analyzing ten categories of verbal interactions in terms of ratios that indicate a teacher's responsiveness to students, a teacher's dominance in the classroom, a teacher's propensity to ask questions in the classroom, and the level of student initiated talk in the classroom.

IVA is designed to analyze the following ten catagories of verbal interactions that occur in the classroom:

1. Clarify/Answer Questions
2. Praises or Encourages
3. Accepts/Uses Ideas of Learner
4. Asks Questions
5. Lecturing/Gives Information
6. Gives Directions/Organizes
7. Learner Responds to a Specific Question
8. Learner Initiates Own Comment or Response
9. Learner Asks Questions
0. Silence or Confusion

These categories align into three distinct groups. The first group (categories 1 to 6) is strictly teacher talk. The second (categories 7 to 9) is strictly student talk. The final item (category 0) indicates the classroom is in a state of silence or confusion.

IVA analyzes these categories and provides feedback about verbal teaching behavior interactions in terms of four

specific ratios:

RR = Response Ratio

DR = Dominant Ratio

QR = Questioning Ratio

IR = Initiative Ratio

These ratios provide summary data of the verbal interactions that occur in the classroom. This data can be an indicator to students of areas of strengths and weaknesses relative to classroom verbal interactions.

Students use an audiocassette tape recorder to tape selected teaching sessions. Within twenty-four hours of the audiotaping, students listen to at least fifteen minutes of the teaching session and every three seconds record a number corresponding to one of the ten possible verbal behaviors. These numbers are then fed into the IVA computer program that summarizes the data and presents ratios that represent classroom interactions.

The ratios are computed as follows:

(Digits refer to categories)

$$RR = \frac{1+2+3}{1+2+3+4+5+6} > 0 \text{ to } 100$$

Responsive Ratio

$$DR = \frac{4+5+6}{1+2+3+4+5+6} > 0 \text{ to } 100$$

Dominant Ratio

$$OR = \frac{4}{4+5} \quad > 0 \text{ to } 100$$

Questioning Ratio

$$IR = \frac{8+9}{7+8+9} \quad > 0 \text{ to } 100$$

Initiative Ratio

These ratios serve as the basis for self-assessment of verbal behaviors. Although there are an assortment of nonverbal behaviors that play an integral part of a classroom, the IVA ratios represent areas of major concern for student teachers concerning verbal behaviors.

The literature (Bailey, 1977; Bushman, 1974; Freiberg, 1987; Krajewski, 1976; Sharkan and Tremba, 1978) clearly supports the view that teachers are capable of using observation aids. Teachers can effectively use observation aids to code their teaching behaviors, make accurate interpretations of the collected data, and to alter instructional behaviors when deemed appropriate.

Verbal Behaviors

The identification of verbal behaviors is a fundamental step in teacher self-assessment. Non-verbal cues are an important aspect of the classroom interactions, but understanding and analyzing verbal cues provides valuable input for examining non-verbal cues. Flanders (1970) and Lux and Bailey (as cited in Bailey, 1981) both devised systems for identifying verbal behaviors in the classroom.

The major forms of verbal behavior can be classified as:

1. accepting and expressing emotions
2. positive reinforcement
3. feedback or building
4. questioning
5. information giving or lecturing
6. direction giving
7. criticism or justifying authority (Bailey, 1981)

Accepting/expressing emotion is an important verbal behavior because it signifies a teacher who accepts and reacts to student feelings and encourages teachers to express their own feelings. Purposes of positive reinforcement include recognizing students for their contributions, building students' confidence, and encouraging students' participation. Most positive reinforcement teacher behaviors result in a positive learning environment. The kind and amount of time given for positive reinforcement is important. Feedback or building is a vital behavior in the classroom because it indicates the teacher's acceptance of or interest in students' ideas. Lots of feedback is characteristic of a learning environment in which ideas are being presented by both the teacher and the students. Building on student ideas is indicative of teacher flexibility and willingness to work with students' ideas.

Questioning can encourage the maximum learning conditions for students. There are various kinds and categories of questions teachers can use. Proper wait-time after asking a question is also important so students can pause and reflect.

Information giving or lecturing is one way of communicating new information to students, of illustrating basic concepts, and of focusing attention on certain material. Direction giving is an important verbal cue because teachers and students must know the goals of the group and the means of achieving the goals. Direction giving also aids the students in being prepared to engage in the learning activities. Criticism or justifying authority can be used to change unacceptable behavior patterns or to justify or clarify lines of authority.

Summary of Literature Review and Related Research

Bailey (1981) suggested the following principles be understood and practiced by teachers engaging in the self-assessment process:

- engage in self-assessment slowly
- strive for openness in self-assessment
- focus on a small number of instructional skills
- use a systematic approach in self-help activities
- use objectives as a reference for self-analysis
- schedule regular sessions for self-assessment practices

- use self-critique forms for recording self-assessment plans and findings

Effective teaching has multiple strands. Self-assessment is one essential strand of effective teaching. Guided reflection and means of obtaining accurate data for self-assessment are necessary components of teacher education programs who are training teachers for the complex classroom of the future. Systematic feedback systems provide impartial data about classroom behaviors. IVA is a computer program system that provides objective data concerning verbal behaviors for the purpose of self-assessment. Verbal interactions are integral components of the classroom interactions.

A review of the literature and current research findings, particularly the SEE study findings and recommendations, support this study. This study investigates the use of IVA, an instructional computer aid, as one form of self-assessment for student teachers.

CHAPTER III

PROCEDURAL METHODS

Introduction

Self-assessment is guised with many cloaks. The heart of self-assessment for teachers is the ability to objectively view oneself in the context of the classroom in relation to the needs of the students. Accurate self-assessment can elude even the most experienced teacher if objective criteria is unavailable. Student teachers are inexperienced self-assessors of classroom interactions. For student teachers to become skilled in accurate self-assessment, training and practice in self-assessment strategies must be present during the student teaching experience.

This study analyzes the effects of integrating Instructional Verbal Analysis, a self-assessment strategy, into the student teaching experience of Loyola University of Chicago elementary and secondary student teachers who had no prior full-time teaching experience. Instructional Verbal Analysis (IVA) is a computer program system created by Dr. Todd Hoover, associate professor, Loyola University of Chicago, that analyzes verbal behaviors in the classroom. IVA, based on the original research analyzing teacher verbal

behavior conducted by Ned Flanders (Flanders, 1970), provides summary data analyzing ten catagories of verbal interactions in terms of ratios that indicate a teacher's responsiveness to students, a teacher's dominance in the classroom, a teacher's propensity to ask questions in the classroom, and the level of initiation students take in the classroom.

Research Questions

Student teachers are traditionally overwhelmed with the myriad of classroom and school expectations. Physical, emotional, and mental exhaustion is not uncommon. Student teachers strive to be prepared in their content areas and to be cognizant of various teaching strategies that will best enable their students to be active learners. Often lost in this daily struggle is time for reflection and adjudication of their own teaching. Cooperating teachers, those certified teachers in the field who work with the student teachers on a daily basis, can offer advice and insights. University supervisors can assess the lessons they observe in relation to both content and pedagogy, offer comments on classroom management and structure, and assess overall teaching ability. Eventually though, the student teachers need to be able to engage in the process of self-assessment of their own teaching. Prior knowledge and training coupled with actual classroom experience will be the basis for daily class success or failure. Ultimately the student teachers

will be the prime assessors of their own lessons in determining if and how their students learn. The IVA program that analyzes verbal interactions in the classroom is one basis for this self-reflection. Self-assessment using the IVA program is one method to foster understanding of the verbal interactions in the classroom that may lead to modifications that can increase active student learning. Incorporating IVA into the student teaching experience raises a series of questions. This study focuses on the following questions pertaining to IVA:

1. What changes in the four IVA ratios, responsive, dominant, questioning, and initiation, occur during the fourteen week student teaching experience?
2. How do perceptions of self-assessment change from the beginning of the fourteen week student teaching experience to the conclusion of the student teaching experience?
3. Can students proficient with IVA accurately assess the verbal teaching behaviors of a teaching lesson and indicate how to adjust teaching behavior to reflect a more interactive classroom?

To understand the research design of this study an in-depth discussion of the teacher education program at Loyola University of Chicago was included in Chapter II. The focus of this study was predicated on two pilot studies with

Loyola University student teachers. A discussion of the pilot studies that preceded the formation of the design of this study is warranted.

Pilot Studies

The focus of this study was designed to integrate IVA within the student teaching experience enabling students to use the data from IVA to alter verbal interactions in the classroom as one form of self-assessment. Two pilot studies, one conducted in the spring semester of 1989, and the second conducted in the fall semester of 1990, provided valuable information and data that helped shape the current study.

Pilot Study One

During the spring semester of 1988-89 (January 16, 1989 through May 5, 1989) the first pilot study was conducted with 31 Loyola University elementary and secondary student teachers. During the first four weeks of student teaching, university supervisors who had been trained to use IVA, audiotaped and coded a fifteen minute teaching session for each of their assigned students. The results of the ratios for each of the student teachers became the pretest scores for this study. Once the pretest data was collected, the 31 student teachers were then randomly assigned to one of three groups.

Group one was assigned to complete journal entries dealing with specific self-assessment areas of concern at

regular intervals throughout the semester. Journal entries focused on various aspects of classroom control; lesson planning, actual lesson implementation and evaluation; and questioning strategies. During the student teaching seminars on March 22, April 5, and April 19, 1989, the students met with a university supervisor for thirty minutes to discuss these journal entries. Group one was never introduced to or trained to use the IVA system.

Students assigned to groups two and three were introduced to the ten verbal interactions of IVA and the ratios IVA produced on February 22. They were then instructed to audiotape six of their own teaching sessions once a week for the next six weeks. Within twenty-four hours of each taping, they were to listen to approximately fifteen minutes of each teaching episode and every three seconds record a number corresponding to one of the ten categories of IVA. The coding sheets were collected at the beginning of each weekly seminar and Loyola University supervisors and graduate students fed this data into the IVA program during the seminar sessions. Data sheets (see Appendix A) containing the percentages of teacher talk, student talk, silence or confusion, and resulting ratios were returned to the students before they left the seminars. Students were encouraged to use this summary data to determine the desired direction of future classroom interactions.

On March 22, April 5, and April 19, group two data

sheets were returned to each student for tapes two, four, and six respectively. For thirty minutes during the student teaching seminars under the direction of a university supervisor, the student teachers were instructed to respond in writing to questions concerning their own dominant, response, questioning, and initiative ratios (see Appendix B).

On March 22, April 5, and April 19, group three data sheets were returned to each student for tapes two, four, and six respectively. For thirty minutes during the student teaching seminars, group three discussed the ratios of their teaching sessions with an IVA expert. During this discussion with the assistance of an IVA expert, group three completed a written analysis of their teaching episodes analyzing the ratios and proportion of time spent in specific categories (see Appendix C).

During the last three weeks of the student teaching experience, the university supervisors again audiotaped and coded at least one fifteen minute classroom teaching episode for each student teacher. The ratios from these audiotapes became the post test scores.

Data from the pretest scores and post test scores was compared for each of the three groups to determine how journal writing, implementing IVA with written responses, and implementing IVA with discussion, affected changes in ratios based on the verbal interactions in the classroom.

No significant differences were found for the RR, DR, QR, and IR from the beginning of the semester to the end of the semester. ANOVA indicated there were no significant differences for the RR, DR, QR, and IR among the three groups. Although no significant differences were found, movements in verbal behaviors toward a more responsive, less dominant, and more questioning classroom were more evident in group three than group one or group two. This movement supported the initial contention of this pilot study. An analysis of the data as well as formal and informal feedback from the student teachers, university supervisors, and Director of Student Teachers, led to changes in the format of the implementation of IVA as one form of self-assessment tool for the second pilot study.

Pilot Study Two

During the fall semester of 1989-90 (August 28, 1989, through December 8, 1989) a second pilot study was conducted with 38 Loyola University elementary and secondary student teachers. For the second pilot study all 38 Loyola elementary and secondary student teachers were introduced to and trained with IVA for the purposes of self-assessment. The university supervisors were not trained with IVA and it was not a focus of their supervision of the student teachers.

The student teachers were trained to use IVA and interpret the results of the IVA system for a total of

twelve hours throughout the semester during the weekly student teaching seminars. The IVA training sessions were held in a computer center of Loyola University. Each student was given on loan a copy of the IVA program, IVA documentation, four labeled audiotapes, and access to an IBM computer. Training sessions included discussion and analysis of the instructional verbal analysis categories, the four IVA ratios, systems of coding and general questions, and concerns relating to IVA. Once the initial training was complete, the students were instructed to audiotape their own teaching sessions once a week for eight weeks. The response, dominant, questioning, and initiative ratios from audiotape one served as the pretest scores and the ratios from audiotape eight served as the post test scores.

During the ongoing bi-weekly training sessions the students observed and coded actual as well as videotaped teaching episodes. They observed and participated in lessons on lesson planning and implementation, questioning strategies, and positive reinforcers. After each observation of the actual or simulated teaching sessions, students responded in writing to questions concerning the four ratios: responsive, dominant, question and initiative (see Appendix D). Discussion of the teaching sessions followed the completion of the written responses to provide feedback and reinforcement of interpreting and using IVA.

Each week students brought to seminar coding sheets of their required weekly audiotapes. Each student teacher fed the data into the IVA program and received a data sheet summarizing the categories of teacher talk, student talk, silence, and the resulting ratios (see Appendix E). Using the information on the data sheets, each week the students were required to interpret these results in writing and to indicate possible variations in their teaching strategies they could employ to alter ratios (see Appendix F).

Data pertaining to the ratios from the first audiotape (pretest) was compared to the eighth audiotape (post test) to determine changes in ratios and types of verbal interactions in the classroom. All 38 elementary and secondary student teachers were required to learn the IVA system and use the summary data for self-assessment. For the purposes of this pilot study, summary data from student teachers with previous paid teaching experience, student teachers seeking certification in art, and student teachers who did not complete their audiotapes and codings according to schedule was not included. Summary data from seventeen student teachers was used for analysis.

Table 1 indicates changes in the RR, DR, QR, and IR between the pretest audiotapes and the post test audiotapes for seventeen student teachers.

Table 1

Paired Samples T-test on Pretest and Post Test Audiotapes for Pilot Study 2.

	PRETEST		POSTTEST		
RATIO	MEAN	S.D.	MEAN	S.D.	PROB
RR	20.12	10.88	29.12	16.22	.054
DR	78.88	10.88	69.88	16.22	.054
QR	42.82	27.71	45.23	24.43	.707
IR	42.41	34.85	52.82	34.04	.415

There were significant differences at the .10 alpha level in the RR and DR ratios of the pretest and post test audiotapes from the beginning of the semester to the conclusion. There were no significant differences in the QR and IR. Although there were no significant differences in the QR and IR, the statistics give a clear indication of the positive ratio changes from the pretest audiotape to the posttest audiotape.

These statistics indicate the mean for RR increased 9%, the mean for DR decreased 9%, the mean for QR increased almost 3% and the mean for IR increase a little over 10%. These statistics coupled with the significant differences in the RR and DR supported the continuation of implementing IVA as a form of self-assessment with student teachers.

At the last formal student teaching seminar the student

teachers viewed a videotaped teaching episode, received a data sheet of the teaching episode they viewed summarizing the ratios as well as the percentage of class time of each of the verbal categories, and responded in writing to questions concerning the teaching episode and the accompanying data. Analysis of these responses against established criteria indicated students' understanding of IVA and its function. The results of the significant changes in the RR and DR from the pretest and post test audiotapes and the descriptive statistics indicated student teachers are able to alter ratios resulting in a more interactive classroom when objective data is available for analysis.

Analysis of Pilot Studies

Analysis of the format and results of the two pilot studies indicated areas of concern that were addressed in the format of this study.

It is important to note that IVA is intended to be used by individuals to monitor the verbal teaching behaviors in the classroom and to be able to alter verbal teaching behaviors to raise or lower ratios when deemed necessary. Because it is common knowledge that students learn better when they are active learners, IVA provides the opportunity for active participation in analyzing the ratios provided by IVA. This analysis can be used as an indication of the strength and weakness of teacher dominance, student

initiation in the classroom, use of questioning strategies, and the responsiveness by the teacher to the students, all areas of concern for student teachers.

Knowledge of the ten categories of verbal teaching behaviors and practice in accurately identifying the ten verbal teaching behaviors are necessary prerequisites student teachers must have before using IVA as a form of self-assessment. Once these skills are mastered, students are then ready to audiotape their lessons, code their lessons, and interpret the results of the IVA system to analyze their teaching behaviors.

Embedded in this study is the propensity to view non-directive teaching as generally more successful for learners than directive teaching. Student teachers are generally encouraged to lower dominance ratios and increase the responsive ratio. Student teachers are generally encouraged to raise the initiative ratios and the questioning ratios. Some of the assumptions behind this study are student teachers need to:

lecture less

praise and encourage more

accept and use the ideas of learners more

adequately clarify and answer student questions

ask more questions

ask fewer lower level thinking types of questions

ask more higher level thinking types of questions

on the students and for the underlying beliefs of what constitutes good teaching to become intrinsic to them, the students need reinforcement on a number of levels. Therefore it was deemed appropriate and necessary for the university supervisors to become knowledgeable and proficient with IVA.

The data derived from the ratio changes on the pre and post tests from the two pilot studies indicated IVA can be an effective tool in the self-assessment process of student teacher. Knowledge and information generated from the data, surveys, observations, and an informal criterion measure administered at the conclusion of the second pilot study were all contributing factors to the design of the current study.

Research Design

The Instructional Verbal Analysis system was incorporated in the student teaching experience of Loyola University elementary and secondary students assigned to a full semester of student teaching in the spring semester of 1990. Data collected from student teachers assigned to grades kindergarten through twelve and who had no previous full time teaching experience were used for this study. Data from student teachers seeking certification in art were not included because they worked in multiples schools and classroom settings in grades kindergarten through twelve that did not contribute to accurate data collection. A

questionnaire completed by the student teachers during the student teaching experience served as the basis for determining inclusion in the study.

Student teachers were trained with IVA for a total of fourteen hours during the two hour weekly student teacher seminars held every Wednesday from 2 p.m. until 4 p.m. The university supervisors were trained for a total of eight hours: six hours in the week preceding the beginning of the spring semester and two hours during the semester. The IVA training and practice sessions for both the student teachers and the supervisors were directed by Dr. Todd Hoover, associate professor at Loyola University and creator of IVA. He was assisted by Lucia Gagnon, graduate assistant in the teacher education office of Loyola University, and Dr. Howard Smucker, Director of Teacher Education, Loyola University.

Data Collection

The study collected the following data:

1. Statistical data of the responsive, dominant, questioning, and initiative ratios derived from three teaching episodes for each student teacher during the fourteen week student teaching experience.
2. Statistical data indicating changes in perceptions of student teachers' abilities to implement selected effective teaching strategies from the

beginning of the fourteen week student teaching experience to the conclusion of the student teaching experience.

3. Descriptive data derived from a criterion measure assessing the student teachers' abilities to interpret IVA ratios of a selected teaching episode and indicate how to adjust ratios to reflect a more interactive classroom.

The university supervisors were responsible for audiotaping and coding three teaching sessions for each of their assigned students. The ratios from the first supervisor audiotape completed during the first four weeks of the student teaching experience, the ratios from the second supervisor audiotape completed before week nine of the student teaching experience, and the third audiotape completed during the last three weeks of the student teaching experience provided data for statistical analysis.

The student teachers each audiotaped and coded five of their own lessons.

The audiotaping schedule was as follows:

Tape #	Recorder and Coder	Week due
1	University Supervisor	five
2	Student teacher	six
3	Student teacher	nine
4	University supervisor	nine
5	Student teacher	eleven

6	Student teacher	twelve
7	Student teacher	thirteen
8	University supervisor	fourteen

Student teachers were responsible for audiotaping and coding their lessons as scheduled. The week the audiotaping and coding were due, students met for seminar in the assigned computer center and for the first fifteen minutes of seminar implemented the IVA program to obtain data (see Appendix G) concerning their lessons. After assessing the data, the student teachers responded in writing to a set of questions (see Appendix H) concerning the teaching episode and the resulting data.

Reinforcement of the purpose and use of the IVA system occurred during bi-weekly seminars to aid the students in increasing their abilities to assess their own verbal teaching behaviors. Seminar topics included questioning strategies, use of positive reinforcers, use of advanced organizers and effective means of closure, and lesson plan organization and implementation. During the seminars students viewed four videotaped teaching sessions, practiced coding those teaching sessions, and discussed the results of the codings with an IVA expert. Students also viewed two fifteen minute teaching sessions while an IVA expert coded those teaching sessions. Immediate feedback from the data from the IVA expert's codings was the basis for discussion of the verbal interactions and how teaching strategies could

be altered to change the verbal interactions.

As previously stated, university supervisors were trained to use and implement IVA during an all-day six-hour workshop held prior to the opening of the semester. During this training the supervisors were given multiple practice sessions to code correctly and to interpret verbal interactions and resulting ratios accurately. Two one-hour training and reinforcement sessions followed during the course of the semester. Because of the training the supervisors received and the checks that occurred throughout the semester in assessing the supervisors' ability to accurately code the teaching sessions, reliability of the codings that were the basis for the collection of the data was established.

To assess student understanding of self-assessment and their perceptions of their abilities to implement selected effective teaching strategies related to the role of verbal interactions in the classroom, a five point Likert attitude survey (see Appendix I) was given to each student teacher during the first weekly seminar and again at the last weekly seminar. This survey provided statistical data indicating changes in student perceptions of their abilities to implement selected effective teaching strategies.

To assess student understanding of the IVA system, the implications of the ratios, and how to implement changes in ratios, during the final week of seminar, the student

teachers viewed a videotaped fifteen minute teaching session on the use of positive reinforcers. After viewing the selected teaching episode, each student teacher received a data sheet (see Appendix J) with the four IVA ratios and percentages of the ten verbal behaviors used to determine the ratios of the teaching episode. Student teachers responded in writing to questions pertinent to that teaching episode (see Appendix K). These responses were compared to criteria established by a panel of IVA experts. IVA experts include the creator of the IVA system and university supervisors trained with IVA for a minimum of thirty hours.

In conclusion the findings from this study consisted of data collected from an analysis of the four IVA ratios derived from audiotapes of three teaching episodes, the Likert survey, and the criterion measure established to determine the student teachers' ability to interpret the IVA ratios relative to a specified teaching episode. The statistical data collected was analyzed using t-tests and analysis of variance to determine significant changes in ratios, attitudes, and ability to accurately assess verbal interactions in the classroom. Descriptive statistics were used to assess the criterion measure.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

This study was conducted to analyze the effects of implementing Instructional Verbal Analysis (IVA) on self-assessment by student teachers. This chapter presents the data derived from the current investigation. Each of the research questions is presented with its corresponding data followed by a discussion of the data to provide answers for the questions posed by this study. These discussions are based on statistical analysis derived from t-testing and ANOVA, performed with SYSTAT (The System for Statistics) within the context of each question.

Presentation of Data

Instructional Verbal Analysis (IVA) provides data in ten categories that are indicative of the verbal interactions that occur in the classroom. The ten categories are:

1. Clarify/Answer Questions
2. Praises or Encourages
3. Accepts/Uses Ideas of Learner
4. Asks Questions
5. Lecturing/Gives Information
6. Gives Directions/Organizes
7. Learner Responds to a Specific Question

8. Learner Initiates Own Comment or Response

9. Learner Asks Questions

0. Silence or Confusion

These categories align into three distinct groups: Group 1, categories 1 through 6, is strictly teacher talk; Group 2, categories 7 through 9, is strictly student talk; Group 3, category 0, indicates the classroom is in a state of silence or confusion.

IVA analyzes these ten categories and provides feedback about the verbal interactions in terms of four specific ratios: Responsive Ratio (RR), Dominant Ratio (DR), Questioning Ratio (QR), and Initiative Ratio (IR). These four ratios provided feedback to the student teachers. That is:

RR is a general indicator of "indirect" teaching.

DR is a general indicator of "direct" teaching.

QR is a general indicator of the amount of questioning.

IR is a general indicator of student initiated talk, response, and questions.

The ratios are computed as follows:

(Digits refer to categories)

$$RR = \frac{1+2+3}{1+2+3+4+5+6} \quad > 0 \text{ to } 100$$

Responsive Ratio

$$DR = \frac{4+5+6}{1+2+3+4+5+6} \quad > 0 \text{ to } 100$$

Dominant Ratio

$$QR = \frac{4}{4+5} \qquad > 0 \text{ to } 100$$

Questioning Ratio

$$IR = \frac{8+9}{7+8+9} \qquad > 0 \text{ to } 100$$

Initiative Ratio

Since IVA is based on Flander's (1970) years of work with Flanders' Interaction Analysis Categories (FIAC) validity of the coding of the IVA system is established through validity established by FIAC (p. 87, Flanders, 1970).

Research Question One

1. Do verbal behaviors change in the classroom of student teachers when statistical data concerning verbal behaviors in the classroom is available for analysis and reflection?

University supervisors audiotaped and coded a minimum fifteen minute teaching episode of each student teacher at three assigned intervals during the fourteen week student teaching experience using IVA. Student teachers audiotaped and coded their own teaching episodes at five assigned intervals during the fourteen week student teaching experience using IVA. The schedule was as follows.

Tape #	Recorder and Coder	Week due
1	University Supervisor	five
2	Student teacher	six
3	Student teacher	nine

4	University Supervisor	nine
5	Student teacher	eleven
6	Student teacher	twelve
7	Student teacher	thirteen
8	University supervisor	fourteen

Audiotapings and codings completed by the supervisors during the assigned weeks provided data for research question one. Only the audiotapings and codings completed by the supervisors were used to insure reliability of the codings that provided the IVA data. Supervisors participated in a six-hour IVA workshop prior to the beginning of the semester. Supervisors participated in two one-hour reinforcement workshops during the semester. Reliability of coding was assured through multiple practices of coding videotaped and actual teaching episodes and comparing those codings with the codings completed by an IVA expert. IVA experts included the creator of the IVA system and two university supervisors trained with IVA for a minimum of thirty hours.

The student teachers completed five audiotapes and codings and received data analysis sheets for each coding (see Appendix J), but the IVA data derived from the student teacher audiotapes and codings was not used for statistical analysis for this study.

Table 2 contains data indicating significant differences found between audiotapes four and audiotapes eight. Although 31 student teachers participated in this study, audiotapes one, four, and eight were accuratly coded and analyzed for 28 student teachers. Supervisors were unable to provide reliable audiotapes

and codings for either audiotapes four or eight for three student teachers. Therefore the following data is derived from 28 cases.

Table 2

Paired Samples T-test Results for Audiotapes 4 and 8

	AUDIOTAPE 4		AUDIOTAPE 8			
RATIO	MEAN	S.D.	MEAN	S.D.	T-VALUE	SIG.
RR	18.82	8.25	23.74	11.9	2.063	.049
DR	80.18	8.25	75.29	12.02	2.048	.050
QR	40.46	20.83	42.16	22.10	.514	.611
IR	30.71	26.22	39.9	26.05	1.979	.058

Significant differences were found between audiotapes four and audiotapes eight for RR, DR, and IR at the .10 alpha level. No significant differences were found between audiotapes one and four and between one and eight. ANOVA indicated there were no significant differences between ratios of student teachers assigned to kindergarten through third grade, fourth through eighth grade, and ninth through twelfth grade.

By week nine when audiotape four was completed, student teachers were beginning to assume a variety of teaching responsibilities in their assigned classrooms. Student teachers had completed audiotaping and coding only two of their own teaching sessions and had IVA data feedback on only one of their own teaching sessions. During the first nine weeks of the student teaching seminars, student teachers concentrated on learning the IVA system, perfecting accurate coding of actual and videotaped

teaching episodes, and analyzing the IVA ratios from these teaching episodes to determine appropriate strategies for more interactive teaching. Between weeks nine and fourteen student teachers assumed full teaching responsibilities for a minimum two week period for their assigned teaching day in their classrooms. The student teachers audiotaped, coded, and analyzed three more of their own teaching episodes during weeks nine and fourteen. Student teacher seminars during weeks nine and fourteen focused on appropriate lesson planning, effective teaching strategies, use of positive reinforcers in the classroom, use of advanced organizers and appropriate closure, and ways to initiate student talk in the classroom.

During weeks nine and fourteen the student teachers struggled with all aspects of teaching. Responsibilities included daily lesson planning and presentation, unit planning and presentation, test preparation, grading, and assumed full responsibility for classroom discipline. They also assumed playground duty, lunchroom duty, and study hall duty. During these six weeks they struggled to utilize a variety of effective teaching strategies in their classrooms and to engage in reflective thought and self-assessment through their required journals and with IVA. The more "directive teaching" student teachers exhibited in audiotapes four is indicative of student teachers' initial struggles to maintain discipline and control in the classroom and to master the rigorous daily teaching schedule.

IVA data provided an objective, nonthreatening indicator of

the verbal interactions and general teaching strategies employed in the student teachers' classrooms. Analysis and discussion of the IVA data of their own teaching episodes in seminar provided opportunities for reflecting on the types of changes needed in teaching strategies to have a more interactive classroom during weeks nine through fourteen. The emphasis on using the IVA categories and ratios in the student teacher seminar and the students increased familiarity with interpreting the statistical data provided by IVA may also account for the significant differences in ratios between weeks nine and fourteen of the student teaching experience. The more comfortable and confident the student teachers became in the classroom, the more they were willing and able to respond to the students in their own classrooms, be less directive, and to encourage a more interactive classroom. This is reflected in the significant changes in the RR, DR, and IR ratios from weeks nine to fourteen.

Research Question Two

2. Do changes in perceptions of self-assessment occur from the beginning of the fourteen week student teaching experience to the end when guided practice in reflective thinking and self-assessment is present?

During the first weekly student teacher seminar, student teachers completed a student teacher self-assessment five point Likert attitudinal survey assessing their perceived abilities to implement selected teaching strategies (see Appendix G). During the student teacher seminar held during the fourteenth week of

their student teaching experience, the student teachers completed an identical survey.

There were ten teaching strategies presented in the survey. The ten strategies were designed to parallel the ten categories of IVA as illustrated by the following:

1. To what extent can the teacher respond to student questions
2. To what extent can the teacher positively reinforce students
3. To what extent can the teacher accept and incorporate student ideas into the lessons
4. To what extent can the teacher ask open-ended questions
5. To what extent can the teacher disseminate content through lecture
6. To what extent can the teacher give clear and concise directions, organizers
7. To what extent can the teacher check student learning by asking questions of a specific student
8. To what extent can the teacher encourage student discussions
9. To what extent can the teacher encourage students to ask questions
10. To what extent can the teacher assess and make changes to improve his/her teaching

Table 3 provides data indicating significant differences in student teacher self-assessment of their abilities to implement

selected teaching strategies. All 31 subjects completed the surveys during the first student teacher seminar and at the last student teacher seminar.

Table 3

Paired Samples T-test Results for Survey 1 and Survey 2

	SURVEY 1		SURVEY 2			
ITEM	MEAN	S.D.	MEAN	S.D.	T-VALUE	SIG.
1.	2.84	1.04	2.16	1.07	3.318	.002
2.	2.65	1.02	2.10	1.04	3.070	.005
3.	3.36	0.66	2.42	1.06	4.636	.000
4.	3.23	0.72	2.26	1.18	4.611	.000
5.	3.10	0.54	2.23	1.06	4.892	.000
6.	3.16	0.86	2.36	1.17	3.848	.001
7.	3.13	0.85	2.03	1.17	5.118	.000
8.	3.13	0.80	2.23	1.09	3.868	.001
9.	2.94	0.73	2.32	0.98	2.979	.006
10.	3.32	0.87	2.23	1.06	6.036	.000

Significant differences were evident with every teaching strategy indicated on the survey. Student teachers' self-assessment of their abilities to implement selected teaching strategies was significantly different from the beginning of the student teaching experience to the conclusion. In other words, students tended to respond more favorably in assessing their abilities and skills to respond to student questions, provide positive reinforcement, accept and incorporate student ideas into their lessons, ask open-ended questions, disseminate content through lecture, give clear and concise directions and organizers, check student learning by asking questions of

specific students, encourage student discussions, encourage students to ask questions, and to assess and make changes to improve their teaching.

Several factors contributed to this significant difference. At the beginning of the semester, the students were introduced to IVA and the IVA categories. Eight times throughout the semester students analyzed IVA statistical data derived from their own audiotaped teaching sessions: five student audiotapes and three supervisor audiotapes. The student teachers used the statistical data generated by IVA to assess their own teaching behaviors relative to each of the ten categories and four ratios. The students completed worksheets (see Appendix G) to focus the analysis. These guide questions addressed changes in teaching behavior to result in a more interactive classroom. These catagories were also discussed frequently in student teacher seminar. The results of the data analyses clearly indicate the student teachers' perceptions of their abilities to implement selected teaching strategies changed significantly from week one of student teaching to week fourteen.

The significant changes in the RR, DR, and IR ratios from weeks nine to fourteen as well as the significant changes in the students' perceptions of their abilities to implement selected teaching strategies indicate the student teachers' abilities to recognize and assess the verbal interactions in the classroom. In addition to recognizing and assessing the classroom verbal interactions the student teachers were able to modify them

accordingly for a more interactive classroom. Analysis of variance indicated no differences among the three groups: student teachers assigned to kindergarten through grade three, grades four through eight, and grades nine through twelve.

Research Question Three

3. Are student teachers able to analyze verbal interactions in the classroom and provide accurate assessment of the types of behavior changes needed to reflect a more interactive classroom when IVA is employed as a basis for reflective thinking and self-assessment?

Five times throughout the semester student teachers audiotaped, coded, and analyzed their own teaching sessions. IVA provided statistical data concerning the ten IVA categories and the RR, DR, QR, and IR ratios. During student teacher seminars the student teachers analyzed the IVA data derived from their teaching sessions and responded to questions concerning the ratios, their significance, and instructional practices that might alter the ratios.

During the student teacher seminar held during week fourteen, the student teachers viewed a fifteen minute video taped teaching episode on the use of positive reinforcers. This videotape served as a criterion to judge the degree of knowledge possessed by the student teachers relative to the use and application of IVA. After viewing the videotape, each student teacher received an IVA data sheet (see Appendix K) reflecting

the teaching episode they had just viewed. Using the IVA data sheet, the students answered the following questions pertaining to the ratios of the teaching episode:

1. List each of the ratios, interpret, and discuss each ratio in relationship to this particular lesson.
   a. Responsive (RR)
   b. Dominance (DR)
   c. Questioning (QR)
   d. Initiation (IR)
2. Discuss the appropriateness of the ratios given for this particular lesson.
3. Choosing the lowest ratio would you want to change that ratio?

   Identify the ratio:_____ Change: ____yes ____no

The correctness of student answers were judged against the criteria established by the panel of IVA experts found in Table 4.

The students viewed the videotaped teaching episode and were provided with IVA data pertinent to that teaching episode. This procedure was done to provide contextual knowledge of the teaching episode in additon to the IVA data derived from the teaching episode. The criterion measure called for specific, detailed responses for each question. The student teachers were not told that a specified number of responses were expected for each question. They had no previous experience with this or any criterion measure relating to IVA. Table 5 provides data

Table 4

Expert Established Criteria for Assessing Students' Abilities to Analyze Classroom Verbal Interactions Relative to IVA

QUESTION	RESPONSE ADDRESSSING:	PERCENT
1 a. RR	IVA category 1	20
	IVA category 2	20
	IVA category 3	20
	Total % of IVA categories 1, 2, and 3	20
	Equality of DR and RR	20
		100 %
1 b. DR	IVA category 4	20
	IVA category 5	20
	IVA category 6	20
	Total % of IVA categories 4, 5, and 6	20
	Equality of DR and RR	20
		100%
1 c. QR	IVA category 4	50
	QR ratio	50
		100 %
1 d. IR	IVA category 7	20
	IVA category 8	20
	IVA category 9	20
	Total % of IVA categories 7, 8, and 9	20
	Value of high IR ratio	20
		100 %
3. APPROP.	Desirable ratios because	
	High IR	20
	Moderate QR	20
	Moderate RR	20
	Moderate DR	20
	Appropriate to given lesson	20
		100 %
4. CHANGE	No need to change QR ratio	100 %

pertaining to the criterion measure assessing student responses relative to IVA of the selected teaching episode on positive reinforcers.

Table 5

Criterion Measure Data of Student Responses Relative to IVA Assessing Selected Teaching Episode

Question #	Mean % Correct	S.D.
1 a. (RR)	48.9 %	26.2 %
1 b. (DR)	53.3 %	14.7 %
1 c. (QR)	65.9 %	28.3 %
1 d. (IR)	54.4 %	21.9 %
2. (APPROP.)	53.3 %	21.5 %
3. (CHANGE)	91.1 %	27.4 %

Descriptive statistics from the criterion measure provide information concerning the student teachers' abilities to assess the ratios of a teaching episode and to analyze those ratios in relation to the given lesson relative to IVA. The correctness of student answers were judged against the criteria found in Table 4.

The mean for RR indicates the student teachers were able to assess accurately almost 50% of the detailed components of the responsive ratio. The mean for DR indicates the student teachers were able to assess accurately slightly over 50% of the detailed components of the dominant ratio. The mean for QR indicates the student teachers were able to assess accurately over 65% of the detailed components of the questioning ratio. The mean for IR indicates the student teachers were able to assess accurately

over 54% of the detailed components of the initiative ratio.

The mean of 53.3 indicates accurate student teacher responses to the appropriateness of the ratios. The mean of 91.1 in assessing the need not to change the lowest ratio indicates students clearly have an understanding of when ratios are appropriate to a given lesson and do not need to be altered.

Summary

The statistical analysis of the data indicates there were significant differences between supervisor audiotape 4 and audiotape 8 for the RR, DR, and IR. This significant difference indicates the student teachers moved from more directive classrooms to more interactive classrooms. The student teachers significantly increased their responsiveness to students, lowered their dominance in the classroom, and raised the level of student initiated talk in the classroom.

The statistical analysis of the Likert student teacher self-assessment survey of selected teaching strategies corresponding to the IVA categories showed significant differences for every teaching strategy. Clearly student teacher perceptions of their abilities to implement selected teaching strategies were significantly different from the beginning of the fourteen week student teaching experience to the conclusion. This is supported by the statistical data indicating significant differences in the RR, DR, and IR from week nine until week fourteen. Student teachers would need to have a firm grasp of how to alter verbal interactions in order to change ratios. The RR, DR, and IR

ratios from audiotapes 4 and 8 indicate significant movement to a more interactive classroom.

The descriptive statistics of the student teacher responses on the criterion measure indicate the student teachers can assess accurately almost 50% of the RR detailed components and over 50% of the detailed components of DR, QR, and IR. The student teachers can pinpoint over 50% of the detailed components necessary to delineate appropriateness of ratios for a given lesson. Twenty-nine out of thirty-one student teachers accurately indicated the lowest ratio for a given lesson was appropriate and no ratio change was necessary.

CHAPTER V

FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

The major purpose of this study was to examine the effects of implementing the Instructional Verbal Analysis (IVA) system of self-assessment by student teachers. IVA is a computer program that analyzes verbal interactions in the classroom and provides summary data of ten categories of verbal interactions in the classroom that determine four ratios: Responsive Ratio (RR) Dominant Ratio (DR), Questioning Ratio (QR), and Initiative Ratio (IR). These ratios characterize teaching behavior in the classroom. Two pilot studies were conducted prior to this investigation. These pilot studies also examined the effects of implementing IVA on self-assessment with student teachers. The findings of the two pilot studies contributed to the format for this study.

A total of 31 student teachers from Loyola University of Chicago were involved in this study. Of these 31 student teachers, 10 completed their student teaching assignments in kindergarten through third grade classrooms, 5 were assigned to grades four through eight, and 16 were assigned to grades nine through twelve. All the student teachers completed a

fourteen week student teaching assignment in public and private schools in Chicago and the surrounding suburbs. None had any previous full-time teaching experience. Seven Loyola University supervisors were assigned to work directly with the 31 student teachers throughout the fourteen weeks. Each of the 31 student teachers received IVA feedback from eight teaching sessions throughout the semester. The university supervisors audiotaped and coded three teaching sessions for each student teacher at assigned intervals throughout the semester. The IVA data derived from the supervisors' audiotapes and codings completed by weeks five, nine, and fourteen provided statistical information for portions of this study. Attitudinal surveys completed by the student teachers at the beginning of the fourteen week student teaching experience and the conclusion of the fourteen week student teaching experience provided data for a portion of this study. A criterion measure completed at the conclusion of the student teaching experience provided data for a portion of this study.

Included in this chapter are the findings and conclusions of this study based on the results presented in Chapter IV, recommendations, suggestions for further research, and a summary of the chapter.

Findings and Conclusions

The results from the discussion in Chapter IV focus on three questions. Research question one: Do verbal behaviors

change in the classrooms of student teachers when statistical data concerning verbal behaviors in the classroom is available for analysis and reflection?

Significant differences were found between audiotapes four and audiotapes eight for RR, DR, and IR at the .10 alpha level. No significant differences were found between audiotapes one and four and between one and eight. ANOVA indicated there were no significant differences between ratios of student teachers assigned to kindergarten through third grade, fourth through eighth grade, and ninth through twelfth grade.

In pilot study two significant differences were found in RR and DR between the pretest audiotape and post test audio tape. For this study there were no significant differences in RR, DR, QR, and IR between audiotape one and audiotape eight, but there were significant differences in RR, DR, and IR from audiotape four and audiotape eight. Various factors may have contributed to this difference. For pilot study two, the student teachers were responsible for eight audiotapes and codings. University supervisors did not audiotape or code any student teaching sessions. Student teachers assumed complete responsibility for the audiotapes, codings, and analysis. For their first audiotape, there was no university supervisor present to adjudicate their teaching. They were free to audiotape any lesson of their choosing in a nonthreatening environment.

For this study, university supervisors indicated which teaching session they would observe and audiotape. It was the first formal observation of the student teacher by the university supervisor. It is likely that during the first supervisor audiotaping, the student teachers were teaching only one lesson that day, knew in advance the university supervisor was coming, and planned a very special lesson for the university supervisor attempting to incorporate as many effective teaching strategies as they could.

By week nine when the university supervisors completed the next audiotape, the student teachers had recently assumed complete responsibility for classroom duties including lesson planning and implementation, unit planning and implementation, testing, grading, and discipline. By week nine, the student teachers were teaching a full class load and survival of the teaching day was paramount. They had audiotaped two of their own teaching sessions, but had analyzed and received IVA feedback from only one coding. Between weeks nine and fourteen student teachers were responsible for audiotaping, coding, and analyzing three more teaching sessions and had apply opportunity to hone their teaching skills, become more confident with discipline and classroom control, and strive to attain a more interactive classroom. As the semester progressed the student teachers felt more confident and comfortable in being more responsive to the students, less dominant, and

encouraging and accepting of more student initiation. They were also more at ease with the university supervisor present in the classroom and strived to exhibit the skills they had attained.

During weeks nine through fourteen the student teaching seminars focused on effective teaching strategies that encourage and enhance a more interactive classroom. The student teachers each analyzed five of their own teaching sessions in terms of the ratios and determined how they could alter the ratios of their teaching sessions for a more interactive classroom. By the conclusion of the student teaching experience they were very familiar with IVA, effective teaching strategies for a more interactive classroom, and how to alter verbal behaviors to change ratios. The significant differences of RR, DR, and IR between weeks nine and fourteen indicate the attainment of more interactive classrooms of the student teachers.

Research question two: Do changes in perceptions of self-assessment occur from the beginning of the fourteen week student teaching experience to the end when guided practice in reflective thinking and self-assessment is present?

Significant differences were evident with every teaching strategy indicated on the survey. Nine of the categories were significant at the .005 alpha level or lower and one category was significant at the .006 alpha level.

This clearly indicates the student teachers' change in attitude from the beginnng of the student teaching experience to the conclusion about their abilities to implement the selected teaching strategies of the survey that parallel the ten IVA categories. Throughout the semester much emphasis was placed on the importance of these categories in relation to effective teaching strategies. The student teachers had IVA feedback on eight of their own teaching sessions with data provided in each of the ten categories corresponding to the survey.

The significant changes in the RR, DR, and IR ratios from weeks nine to fourteen and the significant changes in the student's perceptions of their abilities to implement selected teaching strategies parallel one another. As the student teachers became more aware of the selected teaching strategies and how to implement them, the RR, DR, and IR changed indicating a more interactive classroom.

Research question three: Are student teachers able to analyze verbal interactions in the classroom and provide accurate assessment of the types of behavior changes needed to reflect a more interactive classroom when IVA is employed as a basis for reflective thinking and self-assessment?

The descriptive statistics from Table 6 are indicative of the student teachers' abilities to assess the IVA ratios of a teaching episode and analyze those ratios in relation to a given lesson. The criterion measure created by the IVA

experts was very specific in the required responses. The student teachers had not been coached and had no previous experience in responding to the measures specifically required. As a result the mean scores of RR, DR, QR, and IR all fall within the 50th percentile range. This is an indication that the student teachers had an overall understanding of the specifics of each ratio in relation to a specific teaching session. They indicated knowledge of appropriate ratios at the 50th percentile and accurately indicated when ratios do not need to be altered for a specific teaching session at the 90th percentile.

No criterion measure was conducted at the beginning of the student teaching experience. If a criterion measure had been conducted, significant changes could have been measured. The use of a criterion measure at the beginning of the semester and again at the end of the semester is recommended to measure changes.

Recommendations

The findings of this study answer a number of questions concerning implementing IVA with self-assessment by student teachers, but the findings also raise questions and concerns for the future direction of effectively implementing IVA with self-assessment by student teachers.

After three semesters of implementing IVA certain findings must be addressed. In concurrence with the SEE recommendations, this investigator strongly urges that

reflective thinking and guided self-assessment become integral components of all teacher education programs preparing teachers for the classrooms of this decade and the next century.

Elementary and secondary students enter today's classrooms with social, emotional, and physical needs that impact on their ability to learn and become educated, contributing citizens. Future teachers need far more than knowledge in content areas to be effective classroom teachers. Students learn best when they are involved in learning. The impact of living in a video-attuned world reverberates in every classroom in America. Children need to be moved from passive television viewers and passive learners to active, involved participants in their own education. Our future teachers need to have ample direction and practice in making classrooms interactive centers where knowledge flows freely and skills are actively honed. A reflective thinker willing and able to engage in honest and accurate self-assessment will be constantly attuned to the shifting movements in the classroom. This is a formidable task that stymies many a veteran teacher, but difficulty in training reflective teachers is not a reason for neglecting this critical component of effective teaching. IVA provides objective data that can effectively be used in the self-assessment process.

IVA offers prospective teachers as well as novice and

veteran teachers objective data to analyze the verbal interactions in their classrooms. The percentages of the ten categories and the ratios are clear indicators of actual classroom interactions. This objective data can provide unbiased and nonthreatening information to be analyzed for changing verbal behaviors in the classroom environment. It would be especially beneficial to teachers already accustomed to the daily variations and demands of the classroom.

Student teachers are traditionally overwhelmed with their immersion in the classroom. They struggle to maintain discipline, plan and implement lessons, to keep abreast of the required paperwork, and to have command of content material. IVA is an appropriate self-assessment tool for student teachers if certain criteria are met. The following suggestions would enhance the effectiveness of IVA with student teachers:

1. Effective teaching strategies become an integral part of methods classes on both the elementary and secondary level.
2. IVA is introduced in the methods classes on both the elementary and secondary level.
3. IVA categories are internalized through practice and discussion in the methods classes at both the elementary and secondary levels.
4. Students perfect coding skills prior to student

teaching.

5. Students analyze numerous teaching sessions using IVA prior to student teaching.
6. Students participate in simulated teaching sessions with IVA and engage in analysis and reflective thinking concerning the IVA ratios prior to student teaching.
7. Student teachers assume responsibility for audiotaping, coding, and analyzing at least five teaching sessions during the student teaching experience.
8. Student teachers engage in one-on-one discussions with university supervisors using IVA data as a basis for discussing characteristics of their classrooms.
9. Supervisors are trained and proficient with IVA and utilize IVA data for formative evaluation of student teachers.
10. One component of the student teacher seminar consists of both large group and small group discussion of IVA data and ways to enhance interactive teaching in the classroom.
11. Audiotaped teaching sessions be at least twenty minutes in length when appropriate.
12. Selected audiotaped teaching sessions be repeated with the same students in the same discipline with a similar teaching format so student teachers can focus on implementing effective teaching strategies to alter verbal interactions in the classroom.

13. A criterion measure be administrated during the first week of the student teaching experience and the last week of the student teaching experience.
14. Statistical data continue to be collected to ascertain the impact on implementing IVA with self-assessment by student teachers.
15. Data be collected from student teachers audiotaping and coding their own teaching session during the beginning of the student teaching experience and again near the end. If these audiotapes of the same students are in similar disciplines with similar class formats, the IVA data will be a more accurate assessment of the student teachers' abilities to alter verbal behaviors for a more interactive classroom.

Suggestions for Further Research

Further research recommendations for IVA include:

1. Implementing IVA with experienced teachers at the elementary level, secondary level, and college and university level to ascertain its effectiveness as a form of self-assessment.
2. Follow-up studies be conducted with student teachers trained with IVA when they are novice teachers and experienced teachers.
3. University supervisors implement IVA in their conferences with student teachers following classroom observations to determine how directive the supervisors

are and how interactive the student teachers are.

4. Implement IVA in other areas of training where interactive learning is the goal.

Summary

Statistical data collected from the three semesters of IVA implementation with student teachers in the two pilot studies and this study have supported the original contention that IVA can be a powerful aspect of self-assessment. Although further studies and more refinement of implementing IVA throughout the preservice preparation of teachers-in-training is suggested, statistical data compiled and analyzed illustrates the strengths and potential of IVA for self-assessment.

Significant differences were found in the RR, DR, and IR of audiotapes of student teachers between weeks nine and fourteen of the student teaching experience. Significant differences were found in the attitudinal surveys of student teachers' perceptions of their abilities to implement selected effective teaching strategies related to verbal behaviors in the classroom. Descriptive statistics from a criterion measure illustrated the ability of student teachers to assess ratios of a teaching episode and analyze those ratios in relation to a given lesson. IVA is one tool that provides objective data student teachers can effectively use to alter verbal behaviors in the classroom for more interactive learning.

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APPENDIX A

IVA SUMMARY DATA FOR PILOT STUDY 1

The Instructional Verbal Analysis System
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Final Printing of Data

The name of the instructor is: Ginean Rapp
The name of the observer is: Ginean Rapp

Ratio	Goal	Achieved
RR	1	32
DR	1	67
QR	1	42
IR	1	22

File name is: RAP2 Session Number: 2

Total number of entries: 243

Date lesson completed: March 20, 1989

The instructional session began at: 9:40 am
The instructional session ended at: 9:55 am

Total lesson time = 15 minutes

The description of the lesson follows:

Began reviewing terms from yesterday's lecture. Lecture new material on stress and conflicts.

It is highly recommended that this document be filed for future reference.

Time of printing is: 9:44 am

Date of printing is: March 20, 1989

The Instructional Verbal Analysis System
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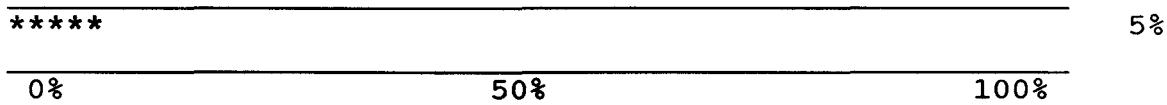
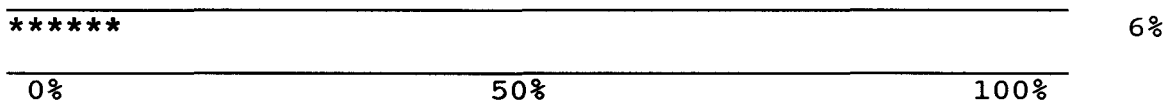
Page One

Instructor: Ginean Rapp

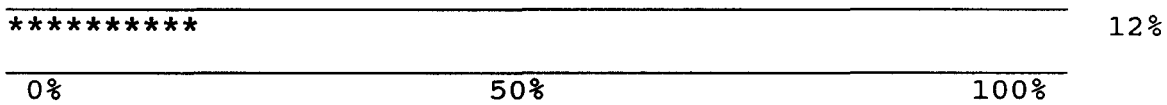
Category #1: Instructor Answers Learner Question



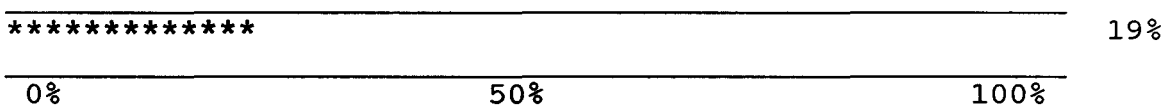
Category #2: Instructor Praises or Encourages



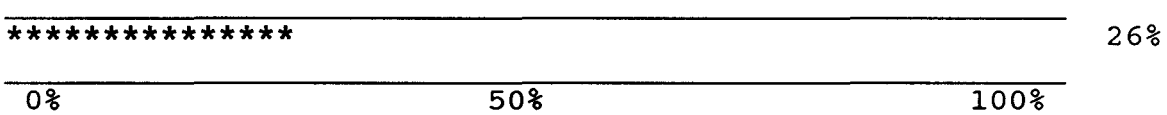
Category #3: Instructor Accepts/Uses Learner Ideas



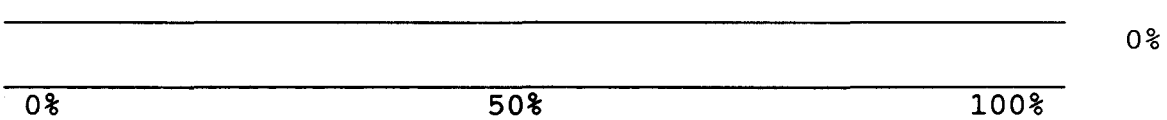
Category #4: Instructor Asks Question



Category #5: Instructor Lectures



Category #6: Instructor Gives Directions/Organizes



The Instructional Verbal Analysis System

Extended Printing of Data
Page Two

Instructor: Ginean Rapp

Category #7: Learner Response to Specific Question

***** 5%

0% 50% 100%

Category #8: Learner Initiates Own Comment or Response

********** 16%

0% 50% 100%

Category #9: Learner Asks Question

* 2%

0% 50% 100%

Category #0: Silence or Confusion

**** 8%

0% 50% 100%

Proportion of Time within Steady State

********** 59%

0% 50% 100%

The Instructional Verbal Analysis System

Extended Printing of Data
Page Three

Instructor: Ginean Rapp

Individual Entries are:

5 5 5 4 4 4 4 8 8 8 1 2 3 5 5 4 4 7 7 4 4 7 7 5 5 4

4 8 8 3 3 2 3 3 4 4 4 8 8 2 2 3 3 3 4 4 1 1 5 5 5 4

4 4 7 7 7 5 5 5 4 8 8 8 2 2 5 5 5 5 1 1 1 5 5 5 5 4

4 4 0 0 0 0 7 7 7 8 8 8 8 8 2 2 2 2 3 3 3 0 0 4 9 9

9 1 1 2 3 4 4 1 1 8 8 5 5 5 4 8 3 3 5 5 5 8 8 3 3 4

4 7 7 7 5 5 5 5 4 4 4 8 8 8 2 2 3 3 4 4 8 8 8 8 3 3

5 5 5 5 4 4 8 8 5 5 5 3 3 5 5 0 0 4 0 0 5 5 5 5 5 5

8 8 8 0 0 5 5 5 5 0 0 5 5 9 9 1 1 0 0 0 0 0 5 5 5 4

4 4 8 8 3 4 4 5 5 4 4 4 0 8 8 8 3 3 5 5 5 5 5 5 4 4

4 8 8 8 3 3 2 3

APPENDIX B

QUESTIONS COMPLETED BY GROUP 2, PILOT STUDY 1

Spring 1989

SCHOOL OF EDUCATION
LOYOLA UNIVERSITY OF CHICAGO

Use the article titled "Technical Analysis of Verbal Behavior in an Instructional Setting" and the printout summarizing your performance as a frame of reference for answering each of the following questions.

1. Based on the Dr and RR ratios, how would you characterize your teaching?

   A. What would you change in your teaching to decrease the DR ratio?

   B. What would you change in your teaching to increase the RR ratio?

2. Based on the QR ratio, how would you characterize your questioning relative to your lecturing?

3. Based on the IR ratio, how would you characterize the amount of student initiated comments?

   A. Assuming you wish to increase the IR ratio, how would you change your teaching?

4. Reviewing the printout for each category, which category had the largest percent of entries? Why?

5. Reviewing the last bar graph on the printout, what proportion of time was spent in "Steady State"? Why?

APPENDIX C

QUESTIONS COMPLETED BY GROUP 3, PILOT STUDY 1

SCHOOL OF EDUCATION
LOYOLA UNIVERSITY OF CHICAGO
Teacher Education Program - Spring 1989

Page One of Two

1. Based on the DR and RR ratios, how would you characterize the teaching?

_____

What was the DR: _____
What was the RR: _____

A. What would you change in the teaching to increase or decrease the DR ratio?

B. What would you change in the teaching to increase or decrease the RR ratio?

2. Based on the QR ratio, how would you characterize the questioning relative to the lecturing?

_____

What was the QR: _____

What was the proportion of time spent in Category 4 __%
What was the proportion of time spent in Category 5 __%

Page Two of Two

3. Based on the IR ratio, how would you characterize the amount of student initiated comments?

_____

What was the IR: _____

_____

What was the proportion of time spent in Category 7 __%
What was the proportion of time spent in Category 8 __%
What was the proportion of time spent in Category 9 __%

Assuming you wish to increase or decrease the IR ratio, how would you change the teaching?

4. Reviewing the printout for each category, which category had the largest percent of entries? Why?

_____

Category # _____ : Title _____

5. Reviewing the last bar graph on the printout, what proportion of time was spent in "Steady State"? Why?

_____

Steady State: _____ %

Your Name: _____ Date: _____

(NOTE: Please turn in your printout with this analysis)

APPENDIX D

ANALYSIS OF SIMULATED TEACHING EPISODES

Simulated Teaching Episode: _____

Class Level: _____ Subject Area: _____

Brief description of coded part of lesson: (lecture, whole class, discussion, small group discussion, review games etc.)

1. After viewing the simulated teaching episode, what suggestions, in general, do you have to change the teaching? Be Specific. Use the back of this sheet if necessary.

2. List each of the ratios, interpret, and discuss each ratio in relationship to the particulate lesson.

   a. Responsive (RR) _____

   b. Dominance (DR) _____

   c. Questioning (QR) _____

   d. Initiation IR) _____

3. Discuss the appropriateness of the ratios given the lesson that was selected.

4. Choosing the lowest ratio, would you want to change that ratio?

   Identify the ratio:_____ Change: _____yes _____no

Explain your answer citing specific teaching methods. Use the back side.

APPENDIX E

IVA SUMMARY DATA FOR CURRENT STUDY

The Instructional Verbal Analysis System
Copyright 1989 by Todd Hoover
Final Printing of Data

The name of the instructor is: Linda Damianides
The name of the observer is: Linda Damianides

Ratio Name	Value
Responsive Ratio	9
Dominance Ratio	90
Question Ratio	36
Initiation Ratio	81

File name is DAM3 Session Number: 3

Total number of entries: 380

Date analysis completed: September 20, 1989

The description of the lesson follows:

Discussion of Elizabeth Bowen's "Tears, Idle Tears"

GRADE: 11th SUBJECT: English

Percentage for each category:

#1 Instructor Answers Question: 0%
#2 Instructor Praises: 1%
#3 Instructor Uses Ideas: 3%
#4 Instructor Asks Questions: 17%
#5 Instructor Lectures: 30%
#6 Instructor Gives Directions: 1%
#7 Learner Response Specific: 29%
#8 Learner Initiates: 7%
#9 Learner Asks Question: 0%
#0 Silence or Confusion: 11%

NOTE: Percentage may NOT sum to exactly 100% due to rounding error.

It is highly recommended that this document be kept for future reference.

APPENDIX F

ANALYSIS OF TEACHING EPISODES FOR PILOT STUDY 2

Student Teaching Seminar Fall 1989

IVA WORKSHOP

Name: _____ Today's Date: _____

Tape # _____ Class Level: _____ Subject Area: _____

Brief description of coded part of lesson: (lecture, whole class, discussion, small group discussion, review games etc.)

1. After listening to your ___ audio tape, what suggestions, in general, do you have for yourself to change your teaching? Be specific. Use the back of this sheet if necessary.

2. List each of your ratios, interpret, and discuss each ratio in relationship to your particular lesson.

   a. Responsive (RR) _____

   b. Dominance (DR) _____

   c. Questioning (QR) _____

   d. Initiation (IR) _____

3. Discuss the appropriateness of the ratios given the lesson that you selected.

4. Choosing the lowest ratio, would you want to change that ratio?

   Identify the ratio: _____ Change: _____yes _____no

Explain your answer citing specific teaching methods. Use the back side of this paper if necessary.

APPENDIX G

IVA SUMMARY DATA FOR CURRENT STUDY

The Instructional Verbal Analysis System
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Summary Analysis of Data

The name of the instructor is: Mary Beth McClain
The name of the observer is: C. Thomas

Ratio Name	Value
Responsive Ratio	23
Dominance Ratio	76
Question Ratio	61
Initiation Ratio	14

File name is MCC1NEW Teaching Session Number: 1

Date analysis printed:

The description of the lesson follows:
DATA TAUGHT: 2-6-90 GRADE: 1st SUBJECT: spelling
DESCRIPTION: alphabetizing by 1 letter, individual letters, then words

Distribution of data entries for each category:

	Category Name	# Entries	Percentage
#1	Instruction Answers Question:	10	3%
#2	Instructor Praises:	50	13%
#3	Instructor Uses Ideas:	0	0%
#4	Instructor Asks Question:	98	26%
#5	Instructor Lectures:	62	16%
#6	Instructor Gives Directions:	38	10%
#7	Learner Response Specific:	48	13%
#8	Learner Initiates:	8	2%
#9	Learner Asks Question:	0	0%
#0	Silence or Confusion:	68	18%

NOTE: Percentage may NOT sum to exactly 100% due to rounding error.

It is highly recommended that this document be kept for future reference or submit with your IVA Analysis Worksheet.

APPENDIX H

ANALYSIS OF TEACHING EPISODES FOR CURRENT STUDY

SCHOOL OF EDUCATION
LOYOLA UNIVERSITY CHICAGO
Teacher Education Program - SPRING 1990

NAME_____Today's Date: _____

Class level: _____ Subject Area: _____

1. After listening to your audio tape (Tape Number _____), what suggestions do you have for yourself to change your teaching? Be Specific.

2. List each of your ratios, interpret, and discuss each ratio in relationship to your particular lesson.

   Responsive Ration _____

   Dominance Ratio _____

   Questioning Ratio _____

   Initiation Ratio _____

3. Discuss the appropriateness of the ratios given the lesson that you selected.

4. Reviewing the printout for each category, which category had the largest percent of entries? Why?

Category # _____ Title_____

---

5. Based on the QR ratio, how would you characterize the questioning relative to the lecturing?

_____

What was the QR: _____

What was the proportion of time spent in Category 4 __%
What was the proportion of time spent in Category 5 __%

---

6. Based on the IR ration, how would you characterize the amount of student initiated comments?

_____

What was the IR: _____

_____

What was the proportion of time spent in Category 7 __%
What was the proportion of time spent in Category 8 __%
What was the proportion of time spent in Category 9 __%

(NOTE: Please turn in your printout with this analysis)

APPENDIX I

ATTITUDINAL SURVEY

Name:_____ Date:_____

STUDENT TEACHER SURVEY

Please react as to how well YOU can implement each of the following teaching strategies. CIRCLE the number that best represents your response.

1 = EXCELLENT implementation skills
2 = VERY GOOD implementation skills
3 = GOOD implementation skills
4 = FAIR implementation skills
5 = POOR implementation skills

Teaching strategies:

1.	Respond to student questions	1	2	3	4	5
2.	Positively reinforce students	1	2	3	4	5
3.	Accept and incorporate student ideas into your lessons	1	2	3	4	5
4.	Ask open-ended questions	1	2	3	4	5
5.	Disseminate content through lecture	1	2	3	4	5
6.	Give clear and concise directions, organizers	1	2	3	4	5
7.	Check student learning by asking questions of a specific student	1	2	3	4	5
8.	Encourage student discussions	1	2	3	4	5
9.	Encourage students to ask questions	1	2	3	4	5
10.	Assess and make changes to improve your teaching	1	2	3	4	5

APPENDIX J

IVA SUMMARY DATA FOR SELECTED TEACHING EPISODE

The Instructional Verbal Analysis System
Copyright 1989 by Todd Hoover
Final Printing of Data

The name of the instructor is: Lucia Gagnon
The name of the observer is: T. Hoover

Ratio Name	Value
Responsive Ratio	48
Dominance Ratio	51
Question Ratio	41
Initiation Ratio	91

File name is: GAG6 Session Number: 6

Total number of entries: 221

Data analysis completed: November 22, 1989

The description of the lesson follows:

Presentation to discuss the use of Classroom Reinforcement for the Teacher Education Program.

GRADE: 12 SUBJECT: Teacher Education

Percentage for each category:

#1 Instructor Answers Questions: 2%
#2 Instructor Praises: 5%
#3 Instructor Uses Ideas: 22%
#4 Instructor Asks Question: 12%
#5 Instructor Lectures: 16%
#6 Instructor Gives Directions: 3%
#7 Learner Response Specific: 3%
#8 Learner Initiates: 31%
#9 Learner Asks Question: 3%
#0 Silence or Confusion: 3%

NOTE: Percentage may NOT sum to exactly 100% due to rounding error.

It is highly recommended that this document be kept for future reference.

APPENDIX K

CRITERION MEASURE FOR SELECTED TEACHING EPISODE

Student Teaching Seminar Spring 1990

IVA WORKSHOP
Final Assessment-Positive Reinforcement

Name: _____ Today's Date: _____

Tape # _____ Class Level: _____ Subject Area: _____

Brief description of coded part of lesson: (lecture, whole class, discussion, small group discussion, review games etc.)

1. After listening to your _____ audio tape, what suggestions, in general, do you have for yourself to change your teaching? Be specific. Use the back of this sheet if necessary.

2. List each of your ratios, interpret, and discuss each ratio in relationship to your particular lesson.

   a. Responsive (RR) _____

   b. Dominance (DR) _____

   c. Questioning (QR) _____

   d. Initiation (IR) _____

3. Discuss the appropriateness of the ratios given the lesson that you selected.

4. Choosing the lowest ratio, would you want to change that ratio?

   Identify the ratio: _____ Change: _____yes _____no

Explain your answer citing specific teaching methods. Use the back side of this paper if necessary.

APPROVAL SHEET

The dissertation submitted by Jeanette Mines has been read and approved by the following committee:

Dr. Todd J. Hoover, Director
Associate Professor, Curriculum and Human Resource Development, Loyola

Dr. Diane P. Schiller
Associate Professor, Curriculum and Human Resource Development, Loyola

Dr. Kay Monroe Smith
Associate Professor, Curriculum and Human Resource Development, Loyola

Dr. Howard Smucker
Assistant Professor, Curriculum and Human Resource Development, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy

November 27, 1990
Date

Todd Hoover
Director's Signature